Vol. 1015 Number 3

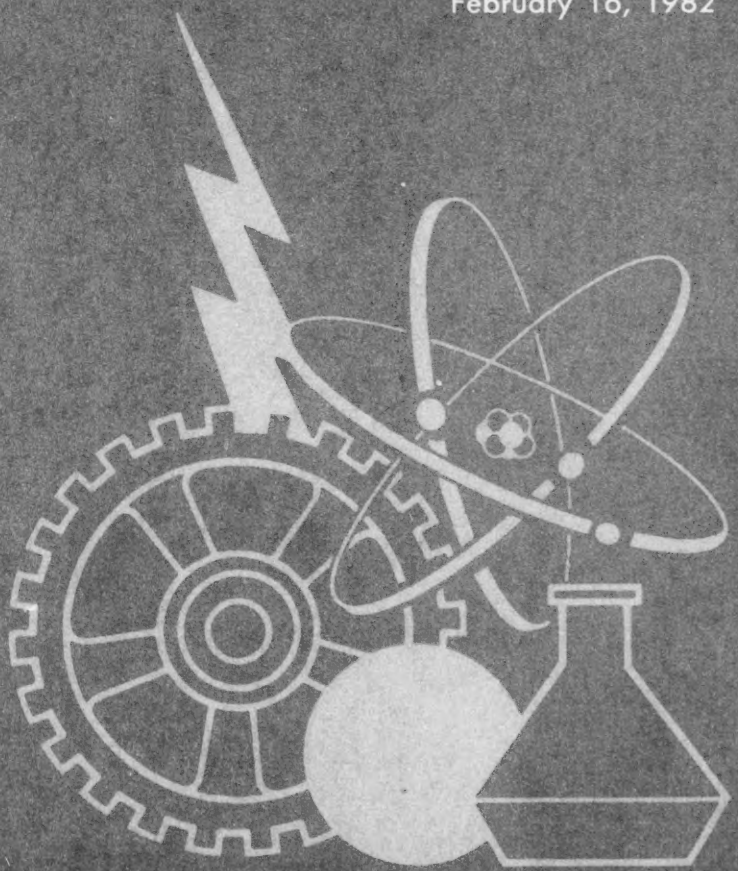
OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

February 16, 1982



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OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

February 16, 1982 Volume 1015 Number 3

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1015 OG 16
Reissue Applications Filed	1015 OG 16
Requests for Reexaminations Filed	1015 OG 16
Public Access to Computerized Patent Search Data Bases	1015 OG 16
Errata (Disclaimer)	1015 OG 16
Patent Copy Subscription Orders	1015 OG 17
Patent Certificates of Correction	1015 OG 18
Dedication	1015 OG 18
Disclaimer	1015 OG 18
Disclaimer and Dedication	1015 OG 18
Patent Suits	1015 OG 18
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1015 OG 21
Condition of Patent Applications	1015 OG 22
Errata	1015 OG 23
Reissue Patents Granted (30,865)	731
Plant Patents Granted (4,824)	733
Patents Granted	
General and Mechanical (4,315,334)	735
Chemical (4,315,753)	873
Electrical (4,316,048)	961
Design Patents Granted (263,005)	1045
Index of Patentees	PI 1
Indices of Reissue, Design and Plant Patentees	PI 36
Classification of	
Patents (Including Reissues)	PI 39
Designs and Plants	PI 41
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 42
Designs and Plants	PI 43
Change of Address Form and Subscription Order Form	Back Page

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981.

Note that the international fees have been increased as of Jan. 1, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Fees	
Basic Fee (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation Fees	65.00

GERALD J. MOSSINGHOFF,
Jan. 19, 1982. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,819,261, Re. S.N. 304,593, Filed Sept. 22, 1981, Cl. 355/14, TRANSFER TYPE ELECTROPHOTOGRAPHIC DUPLICATING APPARATUS, Masaya Ogawa, Owner of Record: *Minolta Camera Kabushiki Kaisha, Osaka, Japan,* Attorney or Agent: Robert J. Lasker, Ex. Gp.: 217

3,819,314, Re. S.N. 285,785, Filed July 22, 1981, Cl. 425/526, LINEAR TRANSFER INJECTION BLOW MOLDING, Paul Marcus, Owner of Record: *Inventor,* Attorney or Agent: John Kurucz, Ex. Gp.: 147

4,115,575, Re. S.N. 295,153, Filed Aug. 21, 1981, Cl. 424/250, 2-(3-AMINO-2-HYDROXY-PROPOXY)-PYRAZINES, Jorg Frei, et al., Owner of Record: *Ciba-Geigy Corp., Ardsley, N.Y.,* Attorney or Agent: Karl F. Jorda, et al., Ex. Gp.: 125

4,173,973, Re. S.N. 320,835, Filed Nov. 12, 1981, Cl. 128/78, HYPEREXTENSION BACK BRACE, David J. Hendricks, Owner of Record: *Inventor,* Attorney or Agent: James van Santen, et al., Ex. Gp.: 335

4,206,578, Re. S.N. 320,618, Filed Nov. 12, 1981, Cl. 52/730, GRID TEE FOR SUSPENSION CEILINGS OR THE LIKE, David F. Mieyal, Owner of Record: *Donn Products, Inc., Westlake, Ohio,* Attorney or Agent: Charles B. Gordon, et al., Ex. Gp.: 354

4,236,682, Re. S.N. 320,852, Filed Nov. 13, 1981, Cl. 242/198, SLOT LOADED, LOW PROFILE MAGNETIC TAPE DRIVE, William M. Barton, Jr., Owner of Record: *Cipher Data Products, Inc., San Diego, Calif.,* Attorney or Agent: Michael H. Jester, et al., Ex. Gp.: 242

4,265,533, Re. S.N. 320,697, Filed Nov. 12, 1981, Cl. 355/110, APPARATUS FOR THE PRODUCTION OF DUPLICATE, AND OTHER FILMS FROM ORIGINAL FILMS, Robert W. Gasse, Owner of Record: *Inventor,* Attorney or Agent: James E. Nolan, et al., Ex. Gp.: 211

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

3,344,023, Reexam. No. 90/000,127, Requested: Dec. 21, 1981, Cl. 424/319, TREATMENT OF HYPERTENSION WITH L-ALPHA-METHYL-3,4-DIHYDROXYPHENYLALANINE, Donald F. Reinhold, et al., Owner of Record: *Merck & Co., Inc., Rahway, N.J.,* Attorney or Agent: Harry E. Westlake, Jr., Ex. Gp.: 125, Requester: Koro, Inc., c/o Kirschstein, Kirschstein, Ottinger & Cobrin, New York, N.Y.

4,054,937, Reexam. No. 90/000,138, Requested: Jan. 18, 1982, Cl. 361/319, CAPACITOR, Lyon Mandelcorn, et al., Owner of Record: *Westinghouse Electric Corp., Pittsburgh, Pa.,* Attorney or Agent: C. L. McHale, Ex. Gp.: 220, Requester: Mobay Chemical Corp., Pittsburgh, Pa.

Public Access to Computerized Patent Search Data Bases.

The PTO, in cooperation with Intellectual Property Owners, Inc. (IPO), has arranged for the placement of computer terminals in the Public Search Room which access the Pergamon Video Patsearch System. This patent searching tool enables the computerized searching of front page and abstract data contained in all patents issued during the past eleven years. In addition, video searching of selected drawings in these patents is also available by computer search for display on viewing screens. The computer searching service is available to the general public in the Public Search Room for a fee related to the cost of each search. The new service was initiated on Dec. 4, 1981 in a ceremony attended by Senator Charles McC. Mathias, Jr., Commissioner Gerald Mossinghoff, and former Commissioner Donald Banner who is now president of IPO.

RICHARD J. SHAKMAN,
Dec. 8, 1981. *Assistant Commissioner for Administration.*

Errata

3,999,386.—*Stanley W. Crull* and *Donald J. MacIntosh.* OVERSPEED PROTECTION CONTROL FOR AN ENGINE. In the notice of Disclaimers appearing on page 40 in the Official Gazette of Sept. 29, 1981, all references to Patent No. 3,999,386, should be deleted as the disclaimer notice appeared in the Official Gazette of Sept. 15, 1981.

4,076,809.—*W. David Weir,* and *Edward E. Kilbourn.* PHOSPHONOUREIDE AND PHOSPHONOTHIOUREIDE ANTHELMINTICS. In the notice of Disclaimers appearing on page 48 in the Official Gazette of Dec. 29, 1981, all references to Patent No. 4,076,809, should be deleted as the disclaimer notice appeared in the Official Gazette of Nov. 24, 1981.

Patent Copy Subscription Orders

Subscribers to the Subscription Service for copies of patents issuing on a weekly basis are requested to review the list of patent numbers appearing on the form (PTO–473) accompanying each of the following orders:

For the issue weeks of approximately December 15, 1981, through February 16, 1982, patents with decimal sub-classes may have been omitted from the listings for those issues.

Verification for missing patents can be made by referring to the Official Gazettes' Classification of Patents Index for each weekly issue. The missing copies can be ordered through the Customer Services facility. Send your order and remittance to:

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Washington, D.C. 20231

Feb. 5, 1982.

RICHARD J. SHAKMAN,
Assistant Commissioner
for Administration.

PATENT NOTICES

Certificates of Correction for the Week of Feb. 16, 1982

Re. 30,495	4,261,652	4,287,462	4,298,477
D. 261,755	4,262,110	4,288,532	4,298,491
4,025,456	4,263,191	4,289,377	4,298,879
4,044,993	4,263,409	4,289,417	4,299,039
4,131,946	4,264,262	4,289,812	4,299,140
4,168,339	4,264,920	4,290,462	4,299,446
4,168,533	4,265,660	4,290,711	4,299,597
4,197,954	4,268,420	4,290,984	4,299,621
4,206,137	4,268,658	4,291,388	4,299,719
4,211,197	4,269,180	4,291,420	4,299,728
4,214,375	4,270,857	4,291,869	4,300,253
4,217,487	4,271,374	4,292,067	4,300,255
4,219,098	4,271,876	4,293,006	4,300,923
4,221,253	4,272,503	4,293,928	4,301,513
4,227,253	4,274,420	4,294,058	4,301,690
4,233,721	4,276,788	4,294,613	4,302,042
4,236,203	4,277,459	4,295,044	4,302,104
4,237,874	4,277,826	4,295,333	4,302,141
4,237,990	4,278,288	4,295,915	4,302,914
4,245,618	4,280,658	4,296,009	4,303,076
4,245,621	4,280,683	4,296,729	4,303,392
4,246,195	4,281,204	4,296,968	4,303,726
4,247,476	4,281,329	4,297,003	4,303,956
4,250,098	4,281,574	4,297,521	4,304,059
4,250,295	4,283,764	4,297,644	4,304,076
4,256,187	4,284,451	4,298,171	4,304,977
4,256,304	4,284,945	4,298,194	4,305,107
4,257,728	4,286,384	4,298,333	4,305,461
4,260,693	4,287,251	4,298,457	4,305,475

Dedication

3,411,222.—*Kathryn I. Williams,* La Grange Park, Ill. METHOD AND APPARATUS FOR INSTRUCTION OF CROSS PATTERN CRAWLING AND CROSS PATTERN WALKING. Patent dated Nov. 19, 1968. Dedication filed Dec. 22, 1981, by the assignee, *Beverly E. William.*

Hereby dedicates this patent to the People of the United States of America.

Disclaimer

4,184,500.—*Leroy J. Herbst,* Louisville, Ky. DISHWASHER VENT CLOSING ARRANGEMENT. Patent dated Jan. 22, 1980. Disclaimer filed Nov. 18, 1981, by the assignee, *General Electric Co.*

Hereby enters this disclaimer to claims 1, 2, 3, 4 and 5 of said patent.

Disclaimer and Dedication

4,222,207.—*Robert Clayton Latimer,* Irvine and *Gary Warren Pomeroy,* Corona Del Mar, Calif. APPARATUS AND METHOD FOR ERECTING A MOBILE HOME ON A PREEXISTING LOT. Patent dated Sept. 16, 1980. Disclaimer and Dedication filed Dec. 3, 1981, by the assignee, *Golden West Homes.*

Hereby disclaims and dedicates to the Public the remaining term of said patent.

Patent Suits

Notices under 35 U.S.C 290; Patent Act of 1952

3,031,450, Boehringer Ingelheim G.m.b.H., SUBSTITUTED PYRIMIDO- (5-4-D)-PYRIMIDINES, **filed** Aug. 24, 1981, D.C.N.J. (Newark), Doc. 81-2704, *Boehringer Ingelheim International* v. *Barr Laboratories, Inc.*

3,121,159, Edward Rogal, CENTRAL OFFICE MASSIVE MEMORY RECORDING SYSTEM, **filed** Aug. 24, 1981, D.C., S.D. Ohio (Dayton), Doc. C-3-81-444. *Valutron, N.V.* v. *NCR Corp.*

3,151,051 Braid and Lawlor, SYNTHESIS OF FLUORINE COMPOUNDS; **3,883,407,** Albert L. Dittman, PRODUCTION OF 2,2,2-TRIFLUOROACETYL CHLORIDE, **filed** Aug. 14, 1981, D.C.N.J. (Newark), Doc. 81-2618, *Airco, Inc.* v. *Halocarbon Products Corp.* Notice of voluntary dismissal of action filed Aug. 20, 1981.

3,182,952, Mark Controls Corp., BALL VALVES, **filed** Aug. 12, 1981, D.C., W.D. Mich. (Grand Rapids), Doc. G81-629CA1, *Mark Controls Corp.* v. *Conbraco Industries, Inc.*

3,237,319, University Patents, Inc., SKI BOOTS HAVING A THIXOTROPIC MATERIAL ENCIRCLING THE ANKLE PORTION THEREOF; **3,402,411, same,** PROCESS FOR MAKING BOOTS, SPORTS EQUIPMENT AND HATS, **filed** May 22, 1980, D.C. Colo. (Denver), Doc. 80-K-675, *University Patents, Inc.* v. *Sport-Obermeyer, Ltd.* Order of dismissal with prejudice filed May 19, 1981.

3,241,520, Wisconsin Alumni Research Foundation, PARTICLE COATING APPARATUS, **filed** Aug. 24, 1981, D.C., S.D. Fla. (Miami), Doc. 81-1861-CIV-ALH, *Wisconsin Alumni Research Foundation* v. *Key Pharmaceuticals, Inc.*

3,250,702, Ecodyne Corp., PROCESS FOR PURIFYING LIQUIDS AND PARTICULATE ION EXCHANGE MATERIAL USED THEREFOR; **3,250,703, same,** PROCESS AND APPARATUS FOR REMOVING IMPURITIES FROM LIQUIDS, **filed** Aug. 13, 1981, D.C. Conn. (Bridgeport), Doc. B-81-370, *Ecodyne Corp.* v. *Croll-Reynolds Engineering Co., Inc.*

3,250,703. (See 3,250,702.)

3,276,784, Henry M. Anderson, Jr., LAMINATED SKI HAVING A FOAM FILLED HONEYCOMB CORE, **filed** Oct. 2, 1978, D.C., N.D. Ohio (Toledo), Doc. C78-456, *Henry M. Anderson, Jr.* v. *Sears, Roebuck and Co.* Action dismissed on Aug. 18, 1981.

3,281,824, Naxon Telesign Corp., ROTATING SWITCH APPARATUS FOR CONTROLLING TRAVELING MESSAGE SIGNS, **filed** Sept. 21, 1979, D.C., N.D. Ill. (Chicago), Doc. 79 C 3949, *Naxon Telesign Corp.* v *GTE Information Systems Inc.* Action dismissed with prejudice on Sept. 15, 1981.

3,316,744, ETC, Inc., IMPACT CRIMPING TOOL, **filed** Mar. 6, 1981, D.C., N.D. Ohio (Cleveland), Doc. C81-381, *ETC, Inc.* v. *Bilfro Corp., et al.* Stipulation and Order dismissing case without prejudice filed Aug. 26, 1981.

3,324,723, Rutherford and Holland, INDICATING DEVICES FOR HEAT TREATMENT, **filed** Aug. 14, 1981, D.C.N.J. (Newark), Doc. 81-2608, *Propper Mfg. Co., Inc.* v *Organon, Inc.*

3,383,487, Chomerics, Inc., THIN FLEXIBLE MAGNETIC SWITCH; **3,860,771, same,** KEYBOARD SWITCH ASSEMBLY WITH DOME SHAPED ACTUATOR HAVING ASSOCIATED UNDERLYING CONTACTOR MEANS; **4,066,851, same,** KEYBOARD SWITCH ASSEMBLY HAVING FOLDABLE PRINTED CIRCUIT BOARD, INTEGRAL SPACER AND PREFORMED DEPRESSION-TYPE ALIGNMENT FOLD, **filed** Nov. 12, 1980, D.C. Minn. (Minneapolis), Doc. 4-80 Civil 565, *Chomerics, Inc.* v. *Sheldahl, Inc.* Pat. Nos. 3,383,487, 3,860,771 and 4,066,851 are valid and enforceable. Defendants are permanently restrained and enjoined from infringing said patents. Filed Aug. 26, 1981.

3,396,500 Polynesian Pools, Inc., SWIMMING POOL CONSTRUCTION, **filed** Sept. 7, 1979, D.C., W.D. Mich. (Grand Rapids), Doc. G79-533 CA6, *Polynesian Pools, Inc.* v *GPM Industries, Inc., et al.,* Upon approval of this Judgment, actions against Defendants are dismissed with prejudice and without costs. Filed Sept. 9, 1981.

3,396,792, Magna Corp., PROCESS FOR RECOVERY OF PETROLEUM BY STEAM STIMULATION, **filed** Sept. 4, 1981, D.C., S.D. Tex. (Houston), Doc. H-81-2270, *Magna Corp.* v. *Petrolite Corp.*

3,402,407, Edythe D. Andrews, DRAIN COVER, **filed** Aug. 18, 1981, D.C., N.D. Ill. (Chicago), Doc. 81 C 4703, *Edward O'Malley Valve Co.* v. *Mid-West Housewares, Inc., et al.* **Same, filed** Aug. 18, 1981, D.C., N.D. Ill. (Chicago), Doc. 81 C 4704, *Edward O'Malley Valve Co.* v. *Ace Hardware Corp., et al.,* **Same, filed** Aug. 18, 1981, D.C., N.D. Ill. (Chicago), Doc. 81 C 4705, *Edward O'Malley Valve Co.* v. *Sears, Roebuck & Co., et al.*

3,402,411. (See 3,237,319.)

3,409,039, Claude L. Griffin, VALVE MEMBER HAVING CONICALLY TAPERED SEATING SURFACE, **filed** Aug. 10, 1981, D.C., S.D. Tex. (Houston), Doc. H-81-2001, *Reed-American Products Co.* v. *Gardner-Deaver Co.*

3,439,461, Wilbert, Inc., BURIAL VAULTS; **3,464,171, same; 3,787,545, same, filed** Oct. 5, 1981, D.C., N.D. Ohio (Akron), Doc. C81-1989A, *Wilbert, Inc.* v. *Akron Wilbert Vault Co. also known as Mack Wilbert Vault Co., Inc.*

3,464,171. (See 3,439,461.)

3,477,745, Allied Insulation Co., QUICK CONNECTION OF PIPE TO DUCTING, **filed** Sept. 4, 1981, D.C., C.D. Calif. (Los Angeles), Doc. 81 4615, *Allied Insulation Co., doing business as Permanent Pipe Products Co.* v. *General Environment Corp., et al.*

3,515,307, Sunbeam Plastics Corp., Inc., REPLACEABLE CAP, **filed** Sept. 18, 1981, D.C., S.D. Ind. (Evansville), Doc. EV 81-184-C, *Sunbeam Plastics Corp., Inc.* v. *Imperial Plastics, Inc.*

3,522,754, L. E. Sauer Machine Co., Inc., REINFORCED FREEWHEELING RESILIENT COVER FOR ROTARY DIE-CUTTING ANVIL, **filed** Sept. 21, 1981, D.C., N.D. Ill. (Chicago), Doc. 81C5301, *L. E. Sauer Machine Co., Inc.* v. *Triangle Die and Supply Co.* Plaintiff, pursuant to Rule 41(a) (1) F.R.C.P. dismissed the above cause of action without prejudice. Filed Sept. 22, 1981. **Same, filed** Sept. 24, 1981, D.C.N.J. (Newark), Doc. 81-3029, *Dicar, Inc.* v. *L. E. Sauer Machine Co.*

3,529,879, Information Design, Inc., MODULAR CONSTRUCTION FOR STORAGE CABINET, **filed** July 24, 1981, D.C. Conn. (Bridgeport), Doc. B 81-337, *National Microsales Corp., et al.* v. *Information Design, Inc., et al.*

3,568,706, Anderson, Greenwood & Co., PRESSURE RELIEVING SYSTEM, **filed** Sept. 8, 1981, D.C., S.D. Tex. (Houston), Doc. H-81-2280, *Anderson, Greenwood & Co.* v. *Brunswick Corp.*

3,616,114, Hamaguchi and Tanaka, REUSABLE COMPOSITE ADHESIVE SEALING TAPES, **filed** Sept. 2, 1981, D.C.N.J. (Trenton), Doc. 81-2811, *Johnson & Johnson* v. *The Proctor & Gamble Co.*

3,620,858, Energy Sciences & Consultants, Inc., AMMONIUM NITRATE EXPLOSIVE COMPOSITION; **3,630,250, same; 3,947,301, same, filed** Mar. 7, 1979, D.C. Colo. (Denver), Doc. 79-F-230, *Energy Sciences & Consultants, Inc.* v. *Ireco Chemicals.* This action, including the Complaint and Counterclaim, are dismissed with prejudice and without costs. Filed Mar. 23, 1981.

3,630,250. (See 3,620,858.)

3,652,248, Loxley, Webb and Barber, PROCESS FOR REDRAWING SILICA GLASS RODS, **filed** Sept. 17, 1981, D.C., N.D. Ohio (Cleveland), Doc. C81-1885, *Pyromatics, Inc.* v. *Michael J. Petruziello, et al.*

3,773,309, E. I. duPont de Nemours & Co., BIAXIALLY ORIENTED POLY(ETHYLENE TEREPHTHALATE) BOTTLE, **filed** Jan. 24, 1977, D.C., N.D. Ohio (Toledo), Doc. C 77-39, *Owens-Illinois, Inc., et al.* v. *E. I. duPont de Nemours & Co.* Case dismissed with prejudice at plaintiff's request under Rule 41(a) (2). Filed May 29, 1981.

3,787,545. (See 3,439,461.)

3,806,852, The Stanley Works, SWITCH ACTIVATING HINGE, **filed** Dec. 4, 1979, D.C. Del. (Wilmington), Doc. 79-567, *The Stanley Works* v. *McKinney Mfg. Co.* Final Order that Claims 1, 2, 6, 7, 8, 9 and 11 are invalid filed Aug. 27, 1981.

3,819,170, Howard R. Longbrake, PORTABLE SHARPENER, **filed** Sept. 21, 1981, D.C., N.D. Ohio (Cleveland), Doc. C 81-1902, *Howard R. Longbrake* v. *E-Z Products Mfg., Inc.*

3,860,771. (See 3,383,487.)

3,863,691, Maschinenfabrik Zuckerman Komm-Ges, CONTOUR COPYING LATHE, **filed** Sept. 9, 1981, D.C. Dist. of Columbia (Wash. D.C.), Doc. 81-2160, *A. C. Compacting Presses, Inc.* v. *Maschinenfabrik Zuckerman Komm-Ges.*

3,883,407. (See 3,151,051.)

3,947,301. (See 3,620,858.)

3,951,352, Western Broadcasting Co., Ltd., MAGNETIC TAPE GUIDANCE DEVICE, **filed** Nov. 2, 1979, D.C., N.D. Calif. (San Francisco), Doc. C79-3088 MHP, *Western Broadcasting Co. Ltd.* v. *Capital Records, Inc., et al.* Plaintiff is the owner of Pat. No. 3,951,352 which is valid and enforceable in law. Defendants are permanently enjoined and restrained from further infringing Plaintiff's patent. Filed Oct. 1, 1981.

3,973,282, Marvin I. May, WATER BED LINER HOLDER, **filed** June 19, 1981, D.C., C.D. Calif. (Los Angeles), Doc. 81-3044 KN, *Marvin I. May* v. *California Waterbed Consoldater, Inc.*

3,987,854, Callihan, Meyer, Wainwright and Taylor, GRAVEL PACKING APPARATUS AND METHOD, **filed** Sept. 4, 1981, D.C., S.D. Tex (Houston), Doc. H-81-2271, *Baker International Corp.* v. *Completion Services, Inc.*

3,989,110, Medlock and Ragsdale, GREEN ONION HARVESTER, **filed** Sept. 25, 1981, D.C., N.D. Calif. (San Francisco), Doc. C81-3855 SAW, *H. Gene Medlock and Herman Ragsdale* v. *Oshita, Inc., et al.*

3,991,268, William M. Goodall, PCM COMMUNICATION SYSTEM WITH PULSE DELETION, **filed** Sept. 29, 1981, U.S. Ct. of Claims (Wash. D.C.), Doc. 587-81, *American Telephone and Telegraph Co., et al.* v. *The United States.*

4,004,768, Nickson Industries, Inc., UNIVERSAL JOINT HANGER FOR TAILPIPES AND THE LIKE, **filed** Sept. 22, 1981, D.C. Conn. (Hartford), Doc. H81-709, *Nickson Industries, Inc.* v. *Rol Manufacturing Co.*

4,016,253, Switzer and Farrington, VACCINE FOR IMMUNIZATION OF SWINE AGAINST BORDETELLA BRONCHISEPTICA INFECTION AND METHOD OF USE, **filed** Sept. 9, 1981, D.C.N.J. (Newark), Doc. 81-2858, *Burns-Biotec Laboratories, Inc.* v. *Beecham, Inc.*

4,017,002, Sterling Drug, Inc., DISPENSING MOIST TREATED TOWELS OR TISSUES, **filed** Aug. 27, 1981, D.C., E.D. Pa. (Philadelphia), Doc. 81-3518, *Sterling Drug, Inc.* v. *Scott Paper Co.*

4,021,257, Tile Council of America, Inc., CEMENTIOUS COMPOSITION FOR USE IN PREPARING POINTING COMPOUNDS OR MORTAR COMPOUNDS; **4,043,827, same,** SAG-RESISTANT DRY-SET MORTAR COMPOSITION, **filed** June 29, 1981, D.C.N.J. (Trenton), Doc. 81-2021, *Tile Council of America, Inc.* v. *American Hoechst Corp.* Plaintiff filed Notice of Discontinuance and Dismissal on Sept. 21, 1981.

4,026,555, Alpex Computer Corp., TELEVISION DISPLAY CONTROL APPARATUS, **filed** Sept. 1, 1981, D.C., S.D.N.Y., Doc., 81-Civ-5439. *Alpex Computer Corp.* v. *The Magnavox Co.*

4,043,827. (See 4,021,257.)

4,066,851. (See 3,383,487.)

4,070,733, A. J. Gerrard & Co., PRE-NOTCHED TIEING WIRES, **filed** Aug. 26, 1981, D.C., N.D. Tex. (Dallas), Doc. CA3-81-1539 R, *A. J. Gerrard & Co.* v. *Davis Walker Corp., et al.*

4,072,230, L. K. Van Keuren Co., Inc., ASSEMBLY FOR SUPPORTING DELICATE EQUIPMENT DURING SHIPPING, **filed** Sept. 14, 1981, D.C., N.D.N.Y. (Utica), Doc. 81-Civ-977, *L. K. Van Keuren Co., Inc.* v. *Central Packaging Supply, Inc.*

4,105,862, Slater Electric, Inc., OUTLET BOX HAVING SCREW MOUNTING MEANS; **4,188,854, same,** SCREW MOUNTING MEANS, **filed** Oct. 2, 1981, D.C., S.D.N.Y., Doc. 81-Civ-6101, *Slater Electric, Inc.* v. *Indian Head, Inc.*

4,142,855, Isolab, Inc., METHOD TO DETERMINE A DIAGNOSTIC INDICATOR OF BLOOD SUGAR CONDITION, AND, A LIQUID CHROMATOGRAPHIC MICROCOLUMN THEREFOR; **4,142,856, same; 4,142,857, same; 4,142,858, same; 4,168,147, same, filed** Sept. 8, 1981, D.C., N.D. Calif. (San Francisco), Doc. C81-3545 SAW, *Isolab, Inc.* v. *Adron General Medical Center, et al.*

4,142,856. (See 4,142,855.)

4,142,857. (See 4,142,855.)

4,142,858. (See 4,142,855.)

4,145,818, Hanspeter Kulling, METHOD AND APPARATUS FOR REMOVING A VAPORIZED LIQUID FROM A GAS, FOR USE IN E.G. A PROCESS BASED ON THE FLUIDIZED BED PRINCIPLE, **filed** Aug. 26, 1981, D.C.N.J. (Newark), Doc. 81-2726, *Glatt Air Techniques, Inc.* v. *Aeromatic AG, et al.*

4,146,096, Galen J. Rocker, LAWN RAKE AND CULTIVATOR, **filed** Sept. 4, 1981, D.C. Minn. (Minneapolis), Doc. 4-81 Civil 585, *Galen J. Rocker* v. *Robert Oldenbury, doing business as Oldenburg Sales and Service.*

4,168,147. (See 4,142,855.)

4,171,013, Robert C. Clark, RETRACTABLE AWNING ASSEMBLY, **filed** Sept. 30, 1981, D.C. Colo. (Denver), Doc. 81-C1721, *Scott & Fetzer Corp., doing business as Carefree of Colorado Division* v. *A & E Systems, Inc., et al.*

4,182,494, Anthony Manufacturing Corp., ANTI SIDE SPLASH DRIVE ARM FOR AN IMPACT DRIVE SPRINKLER, **filed** Aug. 10, 1981, D.C., C.D. Calif. (Los Angeles), Doc. 81 4045 AAH, *Anthony Manufacturing Corp.* v. *Space Vactor Corp., doing business as International Irrigation.*

4,185,816, Morton Bernstein, SIT-UP EXERCISE APPARATUS, **filed** Sept. 9, 1981, D.C., S.D.N.Y., Doc. 81-Civ-5595, *Morton Bernstein* v. *Paragon Sporting Goods Co., Inc.*

4,188,854. (See 4,105,862.)

4,193,189, Sergio Marin, SCISSORS OR SIMILAR CUTTING TOOLS WITH PLASTIC HANDLES, **filed** July 20, 1981, D.C., N.D. Ill. (Chicago), Doc. 81 C 4105, *Italy Produces, Snc* v. *A. K. Das & Co., Ltd.*

4,211,442, John D. Hansen, LOCK STRIKE, **filed** Sept. 8, 1981, D. C., N.D. Calif. (San Francisco), Doc. 81-3548 WHO, *John D. Hansen* v. *Schlage Lock Co.*

4,212,781, SCM Corp., MODIFIED EPOXY RESINS, PROCESSES FOR MAKING AND USING SAME AND SUBSTRATES COATED THEREWITH, **filed** Sept. 18, 1981, D.C., W.D. Pa. (Pittsburgh), Doc. 81-1580, *SCM Corp.* v. *Mobil Oil Corp.*

4,235,442, Fidelity Electronics, Ltd., ELECTRONIC BOARD GAME SYSTEM, **filed** May 22, 1981, D.C., N.D. Ohio (Cleveland), Doc. C81-1083, *Fidelity Electronics* v. *Tyrom, Inc.* **Same, filed** May 26, 1981, D.C., N.D. Tex. (Dallas), Doc. CA-3-81-0844G, *Fidelity Electronics, Ltd.* v. *Applied Concepts, Inc.*

4,243,239, Russell A. Whitney, CATAMARAN DOLLY, **filed** Sept. 21, 1981, D.C., S.D. Fla. (Ft. Lauderdale), Doc. 81-6517-Civ-JAG, *Russell A. Whitney* v. *James Van Roo.*

4,266,578, Swain, Thomerson & Waldrop, DRILL PIPE PROTECTOR, **filed** Aug. 25, 1981, D.C., N.D. Tex. (Ft. Worth), Doc. CA4-81-460K, *Regal International, Inc.* v. *Bell Petroleum Services, Inc.*

4,270,911, Thomas A. McNew, METHOD AND SYSTEM FOR PROVIDING ELONGATED Z-FOLD COPY PAPER, **filed** Sept. 4, 1981, D.C., W.D. Okla. (Oklahoma City), Doc. CIV-81-1190-T, *Digital Magnetic Systems, Inc.* v. *Benjamin T. Ansley, Jr., doing business as ABM/Ansley Business Materials, et al.*

4,272,649, Williams Electronics, Inc., PROCESSOR CONTROLLED SOUND SYNTHESIZER, **filed** Oct. 2, 1981, D.C., S.D.N.Y., Doc. 81-6097, *Williams Electronics, Inc.* v. *Egawa International Co., Ltd.*

Re. 28,369, Merck & Co., Inc., RING A UNSATURATED-20-OXO-11, 17-BIS-OXYGENATED 16-METHYL STEROIDS OF THE PREGNANE SERIES, **filed** June 5, 1981, D.C.N.J. (Newark), Doc. 81-1738, *Merck & Co., Inc.* v. *Dell Laboratories, Inc.*

D. 257,663, Scott & Fetzer Corp., BRACKET DESIGN FOR RETRACTABLE AWNINGS, **filed** Sept. 30, 1981, D.C. Colo. (Denver), Doc. 81-C-1722, *Scott & Fetzer Corp., doing business as Carefree of Colorado Division* v. *A & E Systems, Inc.*

D. 259,184, Microtime, Inc., DIGITAL CLOCK, **filed** Sept. 16, 1981, D.C., N.D. Ill. (Chicago), Doc. 81 C 5226, *Microtime, Inc.* v. *On Tyme Products, Inc.* **Same, filed** Sept. 29, 1981, D.C. Conn. (Bridgeport), Doc. B-81-445, *Microtime, Inc.* v. *Sun Hill Industries, Inc.*

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	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
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New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
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North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
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	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
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	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF January 9, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-23-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	12-18-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-02-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	11-14-80
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	10-06-80
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	5-20-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	6-26-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—VACANT ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	3-24-80
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	12-07-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	10-02-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	4-18-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-07-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director .... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	6-17-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	3-17-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	10-22-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-17-80

Expiration of patents: The patents within the range of numbers indicated below expire during January 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,163,865 to 3,167,777, inclusive

Plant Patents ..... Numbers 2,465 to 2,467 inclusive

ERRATA

In the OFFICIAL GAZETTE, Vol. 1014, No. 2, January 12, 1982, page 631, "4,310,491", and page 632, "4,310,492" should be as follows:

4,310,491

APPARATUS FOR SUPPLYING RAW LIQUID AND RELIEVING PRESSURE OF HIGH-PRESSURE PRODUCT LIQUID

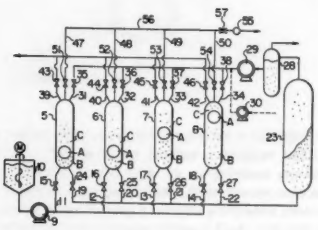
Masakatsu Sakamoto, Matsudo; Kenji Uchida, Kashiwa; Yukishige Kamino, Shimoinayoshi, and Makoto Saito, Minorimachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 2, 1981, Ser. No. 239,511

Claims priority, application Japan, Mar 5, 1980, 55/26560

Int. Cl.[3] B01J *8/00*

U.S. Cl. 422—234 **3 Claims**



1. An apparatus for supplying raw liquid and relieving pressure of high-pressure product liquid, comprising: at least one cylinder provided with a float dividing the space in said cylinder into two working chambers, one of said working chambers being charged with a material slurry at a low pressure, said material slurry being pressurized by the pressure of a high-pressure product slurry formed by a reaction as said high-pressure product slurry is charged into the other working chamber, the pressurized material slurry being forced into a reaction vessel and then said product slurry in the other working chamber is discharged to the outside of the apparatus, a gas discharge pipe having a valve and connected to the side of said cylinder to which said high-pressure product slurry is charged, whereby, when the product slurry charged into said cylinder is to be discharged to the outside of said apparatus, the pressure of said product slurry is relieved and the gases separated from said product slurry are discharged through said valve disposed in said gas discharging pipe.

4,310,492

APPARATUS FOR MAKING A SINGLE CRYSTAL

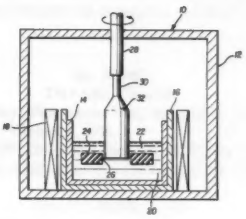
Masae Nakanishi, Kiyoshi Nakamura, Syoza Kawasaki, all of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 21, 1980, Ser. No. 151,877

Claims priority, application Japan, Nov. 14, 1979, 54/146496

Int. Cl.[3] C30B *15/24, 15/34, 35/00*

U.S. Cl. 422—246 **5 Claims**



1. An apparatus for making a single crystal comprising:
a sealed vessel:
a crucible received in the sealed vessel to hold a molten liquid from which a single crystal is to be grown; and
a floating member floating on said molten liquid, said floating member including an opening defining the cross sectional out line of said single crystal during growth of said single crystal being formed of said floating member comprising a sintered body consisting essentially of 0.5 to 5% by weight of at least one metal oxide member selected from the group consisting of oxide of yttrium and the lanthanum series elements; 0.5 to 5% by weight of aluminum oxide; 0.1 to 2.0% by weight of aluminum nitride and the balance of silicon nitride.

REISSUES

FEBRUARY 16, 1982

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,865

MANUFACTURE OF FILTER-TIPPED CIGARETTES

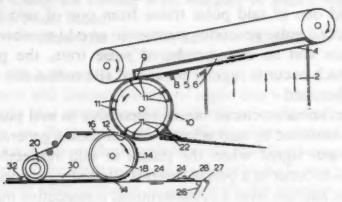
Clifford R. Marritt, Richmond, Va., and Robert E. Williams, Orpington, England, assignors to Molins Limited, London, England

Original No. 3,999,559, dated Dec. 28, 1976, Ser. No. 472,922, May 23, 1974. Application for reissue Nov. 16, 1978, Ser. No. 961,331

Claims priority, application United Kingdom, May 30, 1973, 25738/73

Int. Cl.³ A24C *5/14, 5/18*

U.S. Cl. 131—60 **48 Claims**



42. A rod-making machine comprising a conveyor arranged to move along a first path for feeding a wrapper web and a filler stream supported by the web, an air-pervious endless band arranged to feed at least part of said filler stream onto said wrapper web, a suction wheel having a concave peripheral cross-section and around which said band passes where it feeds said part of said filler stream onto said wrapper web, said endless band having a run arranged to move along a second path extending from said suction wheel and spaced from said conveyor, the paths of said conveyor and said run of said endless band converging in the direction of travel of said wrapper web to compress slightly said filler stream on said web between said run of said band and said conveyor, and means for wrapping the compresed filler stream in said wrapper web.

Re. 30,866

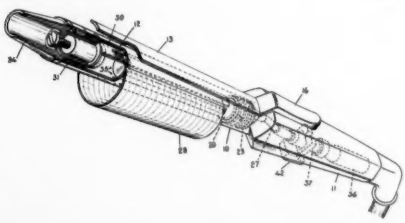
HAIR CURLING IMPLEMENT

George Barradas, Glenville, Conn., assignor to Sunbeam Corporation (Canada) Limited, Toronto, Canada

Original No. 3,921,648, dated Nov. 25, 1975, Ser. No. 538,083, Jan. 2, 1975. Application for reissue Jul. 19, 1976, Ser. No. 706,522

Int. Cl.³ A45D *2/24*

U.S. Cl. 132—37 R **16 Claims**



1. A hair curling implement comprising

an elongated curling arm,

the curling arm having an elongated tubular barrel with a longitudinally extending slot therein;

steam generating means mounted within said barrel;

a clamping arm pivotally mounted on the curling arm and adapted in the clamped position to cooperate with a longitudinally extending upper region of the barrel;

an expansible mandrel constituted by a resilient perforate screen anchored along one longitudinal edge to the barrel and extending through said slot,

the perforate screen being looped into a generally cylindrical configuration encircling a longitudinally extending lower region of the barrel,

said lower region of the barrel having perforations for the passage of steam from the steam generating means to the interior of the mandrel;

a rotary anchoring member mounted within the barrel for rotation about a longitudinal axis, the anchoring member providing a longitudinally extending arm offset from said axis,

the screen being anchored along a second longitudinal edge to said arm of the anchoring member; and

manually rotatable means mounted on said curling arm and coupled to the anchoring member for rotating the anchoring member whereby to expand or contract the mandrel.

Re. 30,867

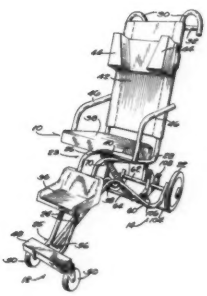
TRAVEL CHAIR

Edward J. Gaffney, Pewaukee, Wis., assignor to Orthokinetics, Incorporated, Waukesha, Wis.

Original No. 3,891,229, dated Jun. 24, 1975, Ser. No. 451,251, Mar. 14, 1974. Application for reissue Mar. 31, 1980, Ser. No. 135,602

Int. Cl.³ B62B *11/00*

U.S. Cl. 280—642 **11 Claims**



1. In a wheel chair having a seat portion, a front leg portion, and a rear wheel assembly, the improvement wherein said front leg portion is so dimensioned as to be insertable through the space between the doorframe of an automobile and one of the seats thereof whereby said front leg portion is placed in support relation to the automobile and will support the seat portion from the automobile in the course of subsequent movement of the wheel chair into the automobile, and *retractor* means for *assisting the attendant in* retracting said rear wheel assembly upwardly independently of any change in the position of the front leg portion with respect to the seat portion *while the front leg portion is supported on the automobile* and to a position which clears the space beneath the rear end of the chair and permits the chair seat portion and retracted rear wheel assembly to be swung over and set upon said automobile seat.

Re. 30,868

PAPER ROLL DIAMETER SENSING DEVICE FOR USE WITH PAPER SPLICING APPARATUS

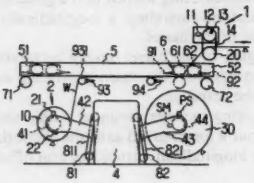
Yasuharu Mori, Amagasaki, Japan, assignor to Rengo Co., Ltd., Osaka, Japan

Original No. 3,974,490, dated Aug. 10, 1976, Ser. No. 492,172, Jul. 26, 1974. Application for reissue Aug. 9, 1978, Ser. No. 933,132

Claims priority, application Japan, Jun. 1, 1974, 49/62267

Int. Cl.[3] G08B *21/00*

U.S. Cl. 340—675 8 Claims



1. A paper roll diameter sensing device for use with paper splicing apparatus of the type splicing the running paper sheet or web unrolled from one paper roll supported by a paper roll supporting stand to the leading end of another paper roll which is also supported by said paper roll supporting stand and which has not yet unrolled, said paper roll diameter sensing device comprising,

a guide roll adapted to rotate in contact with the running paper sheet or web unrolled from said one paper roll;

first pulse generator means responsive to the rotation of said guide roll to generate one pulse for each rotation of said guide roll [in the provision of] *so as to provide* a first pulse train having a pulse repetition rate indicative of a predetermined roll diameter at a given velocity of said web;

second pulse generator means responsive to the rotation of said one paper roll to generate one pulse for each rotation of said one paper roll [in the provision of] *so as to provide* a second pulse train having a pulse repetition rate indicative of the varying diamever of said one paper roll at said given velocity of said web; and

electrical means responsive to said first and second pulse trains to generate an output signal when the pusle repetition rates of said first and second pulse trains are coincident to indicate the reduction of the varying diameter of said one paper roll to said predetermined diameter, said electrical means comprising a selector circuit means responsive to at least one of said pulse trains to divide the said one of said pulse trains from one of said first and second pulse generator means into an odd-numbered pulse train and an even-numbered pulse train, the pulses of which occur in regular sequential alternation one with the other; and

a discriminator circuit means responsive to said pulse trains as modified by said selector circuit means generating said output signal when the pulses in said respective pulse trains occur in a predetermined alternating sequence with one another over a predetermined consecutive number of pulses in said respective pulse trains, said predetermined alternating sequence occurring when the pulse repetition rate of the pulses generated by said first pulse generator means coincides that of the pulses generated by the second pulse generator means.

PLANT PATENTS

GRANTED FEBRUARY 16, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,824

EARLY RIPENING HARALSON APPLE—LAUTZ CULTIVAR

Louis R. Lautz, La Crosse, Wis., assignor to Bailey Nurseries, Inc., St. Paul, Minn.

Filed Mar. 6, 1980, Ser. No. 127,963

Int. Cl.³ A01H *5/03*

U.S. Cl. Plt.—34 **1 Claim**

1. A new and distinct variety of apple tree which originated as a whole tree mutation of the Haralson apple variety, substantially as illustrated and described, characterized by its general similarity to the Haralson apple tree, but being distinct therefrom by the ability to form apples which (1) ripen earlier, (2) are more uniformly red in color with the absence of striping, (3) are resistant to russeting, and (4) are slightly sweeter in taste.

4,825

YELLOW KALANCHOE PLANT

William L. Dilworth, Amarillo, Tex., assignor to J & L Plants Inc., Amarillo, Tex.

Filed Jul. 22, 1980, Ser. No. 171,022

Int. Cl.³ A01H *5/00*

U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct variety of kalanchoe plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of the lemon fragrance with a yellow color, a tall habit of growth, its later flowering period, its response to photo period manipulation to produce flowers on a year around basis, good keeping, long lastingness in relatively dark environment, profusion of blooms on sturdy stems.

PATENTS

GRANTED FEB. 16, 1982

ERRATA

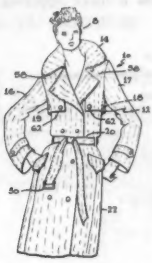
For CLASS	See PATENT NO.
340–693	4,315,594
376–246	4,315,800
260–373	4,315,965
372–050	4,316,156
372–059	4,316,157

PATENTS

GRANTED FEBRUARY 16, 1982

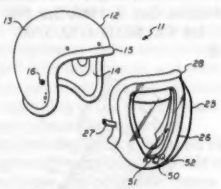
GENERAL AND MECHANICAL

4,315,334
DUAL PURPOSE COAT
Wally Pearsall, 110 E. 9th St., Los Angeles, Calif. 90015
Filed Nov. 13, 1979, Ser. No. 93,377
Int. Cl.³ A41B *3/02*
U.S. Cl. 2—85 **5 Claims**



1. A foldable coat comprising:
(a) a conventional coat including an upper back portion; and
(b) a capelette extending over said upper back portion having its upper and side edges attached to said upper back portion by reinforcing means so as to form with said upper back portion, while attached to said upper back portion and folded back upon itself, a pouch into which the remainder of the coat can be inserted.

4,315,335
DUAL SAFE HELMET
Alvin B. Kennedy, Jr., P.O. Box 282, Angleton, Tex. 77515, and Steven W. Wright, 2917 Ocean Way, League City, Tex. 77573
Filed Oct. 16, 1980, Ser. No. 197,632
Int. Cl.³ A61F *9/04*; A62B *18/02*
U.S. Cl. 2—424 **4 Claims**

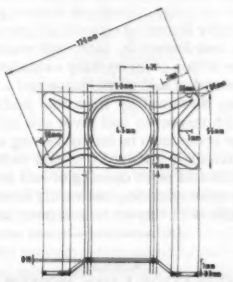


1. A personnel protective apparatus, which comprises:
a helmet for covering the head of a person, said helmet including a facial opening having a resilient edge roll thereabout;
a full face shield attachable to said helmet to cover said facial opening, said face shield having a one piece nonporous resilient seal bonded thereto about the periphery thereof, said seal including a face sealing portion to form a seal about the face of the person and a helmet sealing portion adapted to engage said edge roll and form a seal about said facial opening;
said face sealing portion including a first seal supported to contact and encircle the face to form an inwardly directed pressure energized seal with the face, and a second seal supported to encircle and contact the face outboard of said first seal to form an outwardly directed pressure energized seal with the face;
and said helmet sealing portion including a channel formed in said resilient seal to encircle said full face shield outboard of said face sealing portion, said channel being configured to cooperate with said edge roll to urge said second seal of said face sealing portion into sealing engagement with the face.

4,315,336
INTRAOCULAR LENS
Stanley Poler, 78 E. Second St., New York, N.Y. 10003
Filed Jan. 21, 1980, Ser. No. 113,967
Int. Cl.³ A61F *1/16, 1/24*
U.S. Cl. 3—13 **17 Claims**

1. As an article of manufacture, an optically finished plano-convex glass intraocular lens element, and a mounting adapter for said lens element, said adapter comprising a single piece of plane-parallel glass, the flat surface of said lens element being in secured intimate adjacency to one of the surfaces of said adapter piece, said adapter piece extending radially outward of said lens element at locations angularly spaced about the optical axis of said lens element.

4,315,337
AUTOCLAVABLE ANTERIOR CHAMBER IMPLANT
David P. Choyce, 9 Drake Rd., Westcliffe-on-Sea, Essex SSO 8LR, England
Filed Jul. 24, 1980, Ser. No. 171,889
Claims priority, application United Kingdom, Jul. 26, 1979, 26094/79; Mar. 25, 1980, 10045/80
Int. Cl.³ A61F *1/16, 1/24*
U.S. Cl. 3—13 **1 Claim**



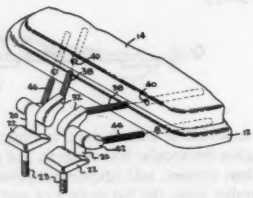
1. In an anterior chamber implant comprising an optic to act as an artificial lens and a haptic to support the optic within the anterior chamber at a distance from the iris to avoid blockage of the pupil, the haptic including feet lying in a plane parallel to and spaced from the optic to rest on the anterior surface of the iris in use and being so shaped as to minimize obstruction to circulation of fluids within the anterior chamber of the eye, the improvement wherein the optic is made of glass and the haptic is separately formed from a high temperature thermoplastic material comprising a polyethersulphone capable of being autoclaved and clinically inert to the fluids in the anterior chamber of the eye, the haptic being formed with a lens mount portion for receiving and supporting the lens and inclined intermediate portion extending between the lens mount portion and the feet, and wherein the optic is secured to the haptic by the use of a solvent adhesive.

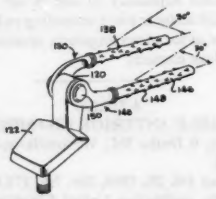
4,315,338

TOILET HINGE ARRANGEMENT

David E. Harrison, Columbus, Miss., assignor to Beatrice Foods Co., Chicago, Ill.

Filed Jul. 25, 1980, Ser. No. 173,265
Int. Cl.³ A47K *13/12*
U.S. Cl. 4—236 **21 Claims**





1. A toilet hinge comprising a hinge post fixedly connectable to a toilet to extend upwardly therefrom, a pivot hole defined by an axially horizontal cylindrical surface extending transversely through an upper portion of said hinge post to define a pivot axis, a cover hinge component including a body member with a pivot sleeve extending transversely outwardly from said body member and having an outer end matingly received in said pivot hole with a pivot opening extending axially inward from the outer end of said pivot sleeve and a cover mounting spike extending downwardly from said body member at an acute angle with respect to said pivot axis and further including a seat hinge component including a swing arm, a pivot shaft extending transversely outwardly of said swing arm and matingly received in said pivot opening of said pivot sleeve and a seat mounting spike extending outwardly from said swing arm at an acute angle with respect to said pivot axis.

4,315,339

COMBINATION LAWN MOWER TOOL

Theodore P. Lightner, Box 712, Smithville, Tex. 78957

Filed Jan. 14, 1980, Ser. No. 82,046
Int. Cl.³ B25F *3/00*; B23P *19/04*; B25B *13/48*
U.S. Cl. 7—138 **3 Claims**

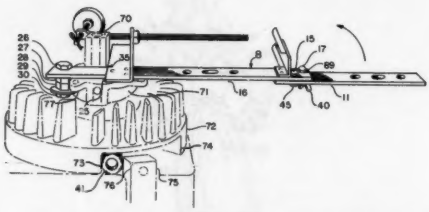
1. A combination tool designed for use as a wrench, flywheel puller, valve remover and valve grinder for use on small gasoline combustion engines comprising:

a long rectangular bar of steel stock having a post like projection at one end projecting from one side thereof; a predetermined distance from said post, a short section of angle iron is welded across said long bar forming right angles on each side thereof;

said post in cooperation with said right angle formations provides a wrench-like coupling with a starter clutch housing when placed on top thereof for removing or tightening the same: A second rectangular bar, being parallel with and disposed in one position flat against said first rectangular bar; said bars being secured together on one end by a pivot bolt and nut; said second bar being pivoted end to end of said long bar to a second position and secured in said position by a self-threading bolt and wing-nut to provide an extension handle when said tool is used for wrench use;

said bars in said first parallel position provide a double strength for flywheel pulling and further include three aligned holes through each of said parallel bars;

the two outside holes each contain a self-threading bolt which carries a force applying threaded nut and a



threaded wing nut for temporarily securing each bolt in its respective hole;

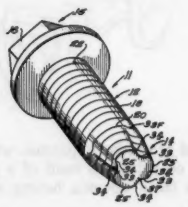
one bolt additionally temporarily carries a ⅜" nut which may be removed and screwed onto the top of the crankshaft to provide a base at said middle hole for said bars to rest on when using the tool to remove a flywheel; said middle hole when in position on top of the ⅜" nut allows the outside holes to line up with factory provided holes in the flywheel whereby said self-threading bolts may be threaded into said factory holes and said force applying nuts may be threaded clockwise against said parallel bars to elevate the flywheel for removal.

4,315,340

METHOD AND APPARATUS FOR MAKING A SELF-THREAD CREATING FASTENER

Donald R. Veldman, 9517 S. Ridgeland Ave., Oak Lawn, Ill. 60453

Division of Ser. No. 934,365, Aug. 17, 1978, Pat. No. 4,235,149. This application Oct. 9, 1980, Ser. No. 195,603
Int. Cl.³ B21H *3/02, 3/08*
U.S. Cl. 10—10 R **13 Claims**



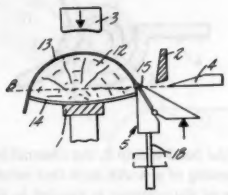
1. A method of manufacturing a thread forming screw having a frusto-conical lead-in section having a tapered surface with lobes thereon and with a polygonal cross section and having a helical thread on a straight shank section comprising the steps of: forming the polygonal cross section on said tapered lead-in section by rolling the tapered surface between a pair of thread rolling dies to force metal outwardly from the tapered surface to leave concavities therein and to force the displaced metal from the concavities radially outwardly and circumferentially into upwardly projecting thread forming lobes to provide alternating thread forming lobes projecting above the formerly tapered surface and inwardly extending cavities extending radially inwardly of said formerly tapered surface, and rolling a screw thread on said straight shank

during the same rolling operation that rolls said polygonal cross section on said frusto-conical lead-in section.

4,315,341
SHOE LASTING MACHINE

Gerhard Giebel, Bad Soden, and Rolf Klein, Pirmasens, both of Fed. Rep. of Germany, assignors to USM Corporation, Farmington, Conn.

Filed Apr. 28, 1980, Ser. No. 144,332
Claims priority, application Fed. Rep. of Germany, May 7, 1979, 2918301
Int. Cl.³ A43D 21/00
U.S. Cl. 12—10.5 9 Claims



1. Machine for pulling over and toe lasting shoes comprising a support for supporting, bottom down, a last carrying a shoe upper and an insole, a plurality of pincers arranged about the last support for gripping marginal portions of an upper carried on its last supported by the last support, variable gripping force pincers, and a toe lasting wiper assembly comprising wiper plates mounted in a wiping plane for in-wiping movement, wherein the last support may be moved from an initial, lowered position into a position in which the bottom of a last supported thereby is in the wiping plane and for lowering the pincers relative to the last support whereby, with a firm gripping force applied to the upper by the pincers, the upper is tensioned over its last, and further wherein the pincers can be arranged above the wiping plane at the start of the machine cycle, auxiliary means being provided whereby any pincer remaining in the wiping plane after the upper has been tensioned as aforesaid can be moved downwardly out of said plane so as not to impede the in-wiping movement of the wipers, the gripping force applied by the pincers to the upper being reducible thus to allow slippage of the upper therein,

said means for lowering the pincers comprises a plurality of fluid pressure operated piston-and-cylinder arrangements, one connected with each pincer, and wherein the auxiliary means is arranged to act through the connection between any pincer remaining in the wiping plane as aforesaid and its piston-and-cylinder arrangement,

said connection between each pincer and its piston-and-cylinder arrangement comprises a movable connecting member, and wherein the auxiliary means comprises cam means arranged to act on said connecting member thus to cause it to move and to cause its associated pincer to be moved out of the wiping plane as aforesaid.

4,315,342
CAR WASHING IMPLEMENT

Earl M. Ash, 2498 Dalesford Dr., Troy, Mich. 48098

Filed Feb. 13, 1980, Ser. No. 121,264
Int. Cl.³ B05C 17/00; A47L 1/15; B50S 3/04
U.S. Cl. 15—121 2 Claims

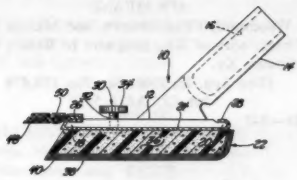
1. A car washing implement, comprising;

a paint-pad type holder and handle member,

a pad member sized for use with said holder and handle member and having a relatively fixed backing which is readily engaged to and disengaged from said holder and handle member for changing said pad member as and when desired,

said pad member being of a water retenative cellular construction for wash and rinse water saturation, as emersed in a receptive bucket, and having a reasonably substantial thickness greater than needed or required for painting purposes and sufficient to allow for yielding conformity to ornamental and contoured auto body surfaces in the washing and distribution of rinse water thereover,

said pad member having a face opposite said holder and a rear edge extending beyond said holder to provide a work contacting surface on said rear edge,



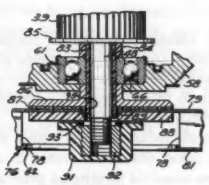
a soft fibrous covering provided and disposed over the face and rear edge of said pad member for wear resistant and extended wash-life use of said pad member and to provide for more uniform wash and rinse water distribution therethrough in the use thereof,

and a relatively free floating wiper blade having at least two wiping blade parts extending forwardly from said holder and handle member for rinse water wiping use as needed.

4,315,343
DOUBLE INSULATED VACUUM MOTOR ASSEMBLY

Thomas H. Neroda, and Roger E. Hollis, both of Watertown, N.Y., assignors to The Scott & Fetzer Co., Watertown, N.Y.

Filed Mar. 17, 1980, Ser. No. 130,984
Int. Cl.³ A47L 9/28
U.S. Cl. 15—339 8 Claims



1. A wet/dry utility vacuum cleaner assembly comprising a drum base having an interior for receiving vacuum-collected material, a cover for the base, a vacuum motor assembly mounted on the cover, an external port adapted to be coupled with a pickup hose and in communication with the interior of the drum base, the vacuum motor assembly including a universal type electrical motor and a circular vacuum chamber, the electrical motor having an armature and associated metal shaft, the vacuum chamber being disposed axially between the motor and the base, the vacuum chamber including a central inlet facing and communicating with the drum interior and a peripheral outlet, a wall separating the motor and vacuum chamber, a portion of the metal motor shaft extending through the separating wall, a bearing mounted at said separating wall and rotatably supporting said shaft portion, a centrifugal fan mounted on said shaft portion in said vacuum chamber for creating a vacuum in said base interior, electrically insulating means preventing electrical current from being conducted between said shaft portion and fluids in said chamber, and seal means at said wall for preventing passage of fluid from said chamber into said motor, said shaft portion being covered with an electrically insulating sleeve, said fan being formed of sheet metal and being assembled over said sleeve, said metal shaft portion having an integral externally threaded free end extend-

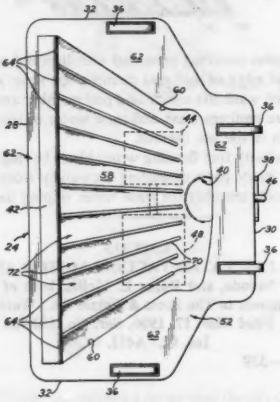
ing axially beyond said sleeve, an electrically insulating nut threaded onto said shaft free end and retaining said fan thereon by axial compression of an annular portion of said fan surrounding said sleeve, and annular seal means compressed by said nut preventing contact of fluid with said threaded free end of said shaft.

4,315,344

VACUUM CLEANER WITH IMPROVED COMPRESSED AIR MEANS

James C. Woodward, Elizabethtown, and Marion D. Holland, Cox's Creek, both of Ky., assignors to Robert E. Robbins, Elizabethtown, Ky.

Filed Aug. 15, 1980, Ser. No. 178,478
Int. Cl.³ A47L *5/14*
U.S. Cl. 15—345 **7 Claims**



1. Vacuum cleaning apparatus including hood means adapted to be supported on and movable along a surface to be cleaned and having an opening on its bottom side confronting the said surface to form therewith a traveling vacuum chamber, said apparatus comprising:

a. suction nozzle means located within the hood means and having an outlet that is connected to a vacuum source;

b. a jet stream manifold positioned generally across the hood means and being provided with a plurality of orifices which are directed at a flat angle toward the said surface to be cleaned;

c. a low ceiling plate connecting the jet stream manifold with the suction nozzle means, and partitions suspended from the ceiling plate and positioned between adjacent orifices so as to form narrow wind tunnels connecting the jet stream manifold to the intake of the suction nozzle means;

d. and an electrically driven miniature compressor positioned above the low ceiling plate and provided with a conduit to deliver a compressed fluid to the jet stream manifold.

4,315,345

PROFILED HINGE JOINT

Hendrikus J. Schijf, 2 Kraatsweg, 6732 Am Harskamp, Netherlands

Filed Jan. 3, 1980, Ser. No. 109,365
Int. Cl.³ E05D *7/10, 1/06*
U.S. Cl. 16—267 **8 Claims**

1. A hinge joint including first and second cooperable hinge members,

I. The first hinge member comprising:

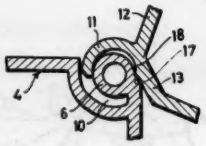
(a) an elongated frame adapted to be attached to a first part to be hinged, and

(b) a bead extending longitudinally along the frame, the bead having a substantially circular cross-sectional shape, and the bead having a recess in its exterior surface, the recess extending for the length of the bead, and

II. the second hinge member comprising:

(c) an elongated frame adapted to be attached to a second part to be hinged to the first part, and

(d) a concave channel extending longitudinally along the frame (c), the channel being sized to rotatably accom-



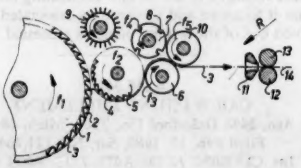
modate the bead within it, the channel having a longitudinal opening of a width such that when one longitudinal edge of the opening is located in the recess of the bead, the bead can pass between the longitudinal edges of the opening into the channel to assemble the hinge members, and when the hinge members are thereafter relatively rotated so that the one edge of the opening is out of registry with the recess, the bead cannot pass between the longitudinal edges of the opening, whereby the hinge members remain assembled in relatively rotatable condition.

4,315,346

CRUSH ROLL ARRANGEMENT FOR A CARD WEB

Robert Demuth, Wallisellen, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland

PCT No. PCT/EP78/00025, § 371 Date Aug. 24, 1979, § 102(e) Date Aug. 24, 1979, PCT Pub. No. WO79/00460, PCT Pub. Date Jul. 26, 1979
PCT Filed Dec. 6, 1978, Ser. No. 129,973
Claims priority, application Switzerland, Dec. 30, 1977, 16274/77
Int. Cl.³ D01G *15/96;* B65H *27/00*
U.S. Cl. 19—65 CR **28 Claims**

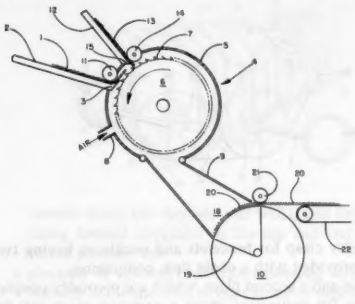


1. Crush roll arrangement for a card web with two cooperating working rolls characterised in that at least one of the two working rolls is designed as a hollow member, the substantially cylindrical sleeve of which is adapted to be under the influence of a pressurized medium on the roll inside and which is elastically deformable in radial direction, and that a second roll is supported at such distance to counteract the deformation of the deformable roll locally.

4,315,347
FIBERIZATION OF COMPRESSED FIBROUS SHEETS VIA RANDO-WEBBER

Jared A. Austin, Appleton, and Thomas P. Van Iten, Menasha, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Nov. 26, 1979, Ser. No. 97,242
Int. Cl.³ D01G 25/00
U.S. Cl. 19—145.7 5 Claims



1. A method for producing a non-woven fibrous web comprising a blend of short cellulosic fibers of papermaking length and longer reinforcing fibers, comprising the steps of:

(a) feeding a compacted batt of short cellulosic fibers of papermaking length substantially radially to a rotating lickerin over a first nose bar such that said fibers are removed from said batt;

(b) feeding a second compacted batt of longer reinforcing fibers over a second nose bar to the lickerin following the first nose bar in the course of lickerin rotation such that said fibers are removed from said batt so as to intimately blend the long and short fibers;

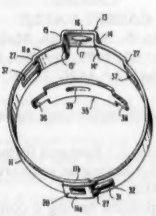
(c) doffing the blend of short cellulosic fibers and the longer reinforcing fibers from the lickerin and directing the blend to a condensing screen to form a web, the improvement comprising:

positioning said first nose bar such that it is separated from said lickerin by at least 0.040 inches, such that said short cellulosic fibers are removed from said compacted batt by vibratory forces generated by said lickerin impacting said compacted batt.

4,315,348
MECHANICAL LOCK FOR CLAMPS

Hans Oetiker, Oberdorfstrasse 21, CH-8810 Horgen, Switzerland

Filed May 8, 1979, Ser. No. 36,979
Int. Cl.³ B65D 63/02; F16L 33/22
U.S. Cl. 24—20 CW 35 Claims

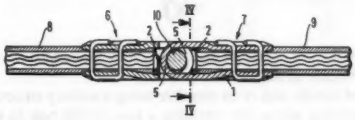


1. A clamp structure which comprises band means and at least one means for tightening the clamp structure about an object to be fastened, and in which at least one overlap exists between an outer band portion and the free end of an inner band material which may cause a discontinuity in the smooth, ring-like internal configuration of the clamp structure, characterized by further means including a tongue-like means at the free end of the inner band material and an outwardly directed step in the corresponding overlapping area of the outer band portion provided with means for receiving the tongue-like means to thereby assure a substantially smooth, gap-free transition devoid of any step in the circumferential direction from each free end of the inner band materials to the ring-like configuration formed by the adjoining band portion of the band means when the clamp structure is tightened about said object by the use of said tightening means.

4,315,349
CONNECTING STRIP FOR CONVEYOR BELTS

Hermann Stolz, Muehlheim, Fed. Rep. of Germany, assignor to MATO Maschinen- und Metallwarenfabrik Curt Matthaei GmbH & Co. KG, Offenbach, Fed. Rep. of Germany

Filed Apr. 17, 1980, Ser. No. 141,218
Claims priority, application Fed. Rep. of Germany, May 21, 1979, 2920461
Int. Cl.³ F16G 3/02
U.S. Cl. 24—33 C 6 Claims



1. A connector strip for securing the ends of a conveyor belt to each other by means of a hinge pin, comprising a plurality of individual connector elements and means (2) operatively holding together said individual connector elements to form said strip, said holding means being rigidly secured to a surface of each connector element forming the strip, said holding means comprising a wire member having a wave form which is so connected to each connector element that the elements of a strip are axially aligned for the insertion of the hinge pin, whereby the bendability of the connector strip is assured for facilitating the insertion of the hinge pin (10).

4,315,350
OVERCENTER BUCKLE

Robert Looker, Carpenteria, and Richard E. McLennan, Rancho Palos Verdes, both of Calif., assignors to Satron, Inc., El Segundo, Calif.

Continuation-in-part of Ser. No. 3,544, Jan. 15, 1979. This application Nov. 15, 1979, Ser. No. 94,579
Int. Cl.³ A44B 21/00
U.S. Cl. 24—68 R 12 Claims

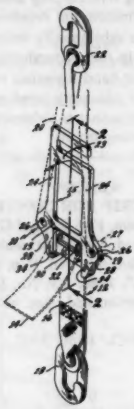
1. A relatively flat overcenter buckle of the type which is connected to a loop of a connector extending in a first direction from the buckle and which is used for tensioning and removably securing to the buckle a belt extending in an opposite direction from the buckle through overcenter action of said buckle in which tension tends to keep said buckle in a locked position, said buckle comprising:

a handle having a front surface and a rear surface, the handle having a pair of opposite sides with each side having an eye large enough for the connector to pass through and the eyes extending from each of said opposite lines along a line extending across said handle, the handle having two parallel legs extending perpendicularly to said line and spaced apart a distance sufficient to accommodate the width of the belt with clearance;

a first cross member joined to said handle and extending parallel to said line across the space between the legs and

located in a plane which is offset with respect to the sides of said handle;

said handle being pivotable along an axis formed by said line between an unlock position in which the tension is released to a lock position in which the tension cooperates



with the offset of said first cross member to retain said buckle in said locked position;

said handle and cross member being a unitary structure; and,

retaining means for retaining a loop of the belt to said handle.

4,315,351

SLIDER FOR RIBBONS AND ASSEMBLING PROCESS THEREOF

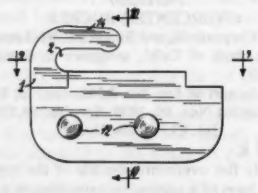
Dario Bartolini, Impruneta, Italy, assignor to Lovable Italiana S.p.A., Grassobbio, Italy

Division of Ser. No. 827,601, Aug. 25, 1977, abandoned. This application Dec. 11, 1978, Ser. No. 968,187

Claims priority, application Italy, Jun. 17, 1977, 24792 A/77

Int. Cl.³ A44C *5/18*; A44B *11/25*

U.S. Cl. 24—198 **4 Claims**



1. In combination with a fabric, a ribbon slider comprising a body or member of thermoplastic material including a first planar portion defining at least one ribbon passage and slide slot, and including a second welding or sealing portion extending as a continuation of said first portion, said second portion being coplanar with a face of said first portion and being provided with one or more side projections ultrasonically welded to said fabric by diffusion of the molten thermoplastic material of the tips of said projections through the loops of said fabric, said slider comprising two reversely opposed identical slider elements, each of the slider elements having a resilient arm cantilevered extending parallel to part of the slider edge opposite to said fabric welding or sealing portion to define part of the ribbon slide slot.

4,315,352

LOCKING DEVICE FOR A BRACELET OR NECKLACE

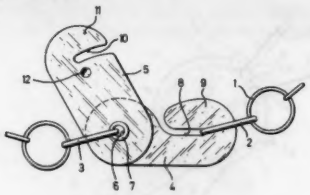
Hans R. Wagner, Rte. de Plagne 82, CH-2537 Vauffelin/BE, Switzerland

Filed Dec. 27, 1978, Ser. No. 973,786

Claims priority, application Switzerland, Dec. 27, 1977, 16054/77

Int. Cl.³ A44B *13/00*

U.S. Cl. 24—241 SP **5 Claims**



1. A jewelry clasp for bracelets and necklaces having two ends, each provided with a chain link, comprising:

a first plate and a second plate, which are pivotably coupled together for movement about a common pivot axis between an opening and locking position, said plates each having an aperture formed therethrough aligned with said pivot axis through which one of the chain links may extend, said first plate having a hook-like end portion which defines a guide slot for receiving the other of the chain links and said second plate having an arcuate slot formed therein having a portion running in a concentric manner with respect to the pivot axis which defines an arched portion on an end portion of said second plate disposed distal to the pivot axis relative to another end portion thereof which arched portion also runs generally concentrically with respect to the pivot axis and which, in said locking position, is received through said other chain link received in said guide slot of said hook-like end portion of said first plate, said guide slot of said first plate having a first portion opening onto an edge of said first plate which runs in a generally non-radial direction relative to said pivot axis and a second portion which merges with said first portion and which runs substantially in a radial direction relative to said pivot axis and which, in said locking position, crosses said arcuate slot of said second plate to define a single open area of overlap through which said other chain link may extend, said area of overlap lying exclusively in the radially running and the concentrically running portions of said guide slot and arcuate slot, respectively said area of overlap having a cross-section closely equal to the cross section of said other chain link, and said aread of overlap being located at the terminal closed end of each slot.

4,315,353

CASKET VAULT

Lloyd L. Sorensen, 256 W. 300 South, Malad, Id. 83252

Filed Mar. 31, 1980, Ser. No. 135,329

Int. Cl.³ A61G *17/00*

U.S. Cl. 27—2 **5 Claims**

1. A lightweight, sealed burial vault made of plastic comprising:

a substantially rectangular base unit forming the floor of said vault, said base unit having an outwardly extending ledge around its perimeter;

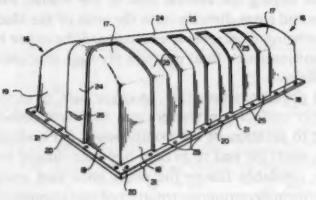
a dome-like cover portion having a concave top integrally formed to the upper edges of upstanding side and end walls, said side and end walls also being integrally formed together at their junctions;

a flange extending outwardly from the bottom edge perimeter of the end said side walls, and flange being formed

integrally to the bottom edges of the end and side walls of said cover portion, wherein the flange mates with the ledge on the base unit when the dome-like cover portion is positioned on the base unit;

means for sealing the flange on said cover portion to the ledge on said base unit;

an elongate rib extending longitudinally along the longitudinal center line of the top of said cover portion and down-



wardly along the opposite end walls, said longitudinal rib being formed integrally to the top and end walls of the cover portion; and

a plurality of spaced, cross ribs extending upwardly along the side walls and then along the top of said cover portion to join said elongate rib, said cross ribs being formed integrally to the side walls and top of the cover portion with the upper ends of said cross ribs further being integrally formed to the side edges of said elongate rib.

4,315,354

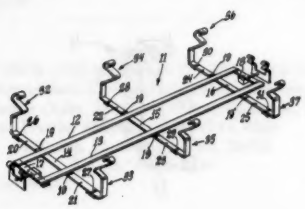
CASKET CARRIER

Paul Behrendt, 9429 N. Avers, Evanston, Ill. 60203

Filed Sep. 2, 1980, Ser. No. 183,189

Int. Cl.³ A61G *17/00*

U.S. Cl. 27—27 **8 Claims**



1. A casket carrier comprising:

(a) a collapsible frame,

(b) said frame consisting of spaced apart elongated runners, a plurality of cross members extending beyond and to either side of said runners,

(c) handle supporting brackets connected to the ends of said cross members adapted to have facial contact with a portion of the sides of a casket when the latter is placed upon the carrier so as to hold the casket thereon,

(d) means for pivotally connecting said brackets to the ends of said cross members whereby said brackets may be folded into a collapsed position relative to said runners,

(e) means provided by said brackets for removably holding an elongated handle is a parallel elevated relation to said runners, and in a spaced relation to the sides of a casket when said cross members are in an extended casket recieving position, and

(f) an elongated handle held by said means provided by said brackets by which a casket placed on the carrier may be carried.

4,315,355

STRAND CRIMPING TREATMENT

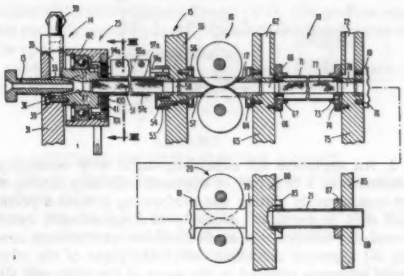
Robert K. Stanley, Media, Pa., assignor to Techniprises Limited, Douglas, Isle of Man

Continuation-in-part of Ser. No. 809,992, Jun. 27, 1977, Pat. No. 4,162,564. This application Jul. 26, 1979, Ser. No. 61,007

The portion of the term of this patent subsequent to Jul. 31, 1996, has been disclaimed.

Int. Cl.³ D02G *1/12, 1/20*

U.S. Cl. 28—251 **8 Claims**



1. In compressive crimping of funicular textile material propelled lengthwise and accompanied by flow of propellant fluid into a first laterally confined region, wherein propelled textile material accumulates temporarily as a compressed mass in a downstream portion of the region, and at least some such fluid diffuses laterally from a portion of the region unoccupied by the compressed mass, the improved comprising utilizing positive lateral diffusion of such fluid to control the accumulation of compressed textile material in the region by controlling the rate of forwarding of such textile material out of the region, including the step of forwarding the textile material from the leading edge thereof at a rate commensurate with the extent of accumulation of the compressed mass of textile material in the region, into a separate treating region, confining the textile material temporarily in the separate region with dyestuff present therein, for fluid treatment therein, injecting treating fluid into the latter region, and thereby dyeing the textile material.

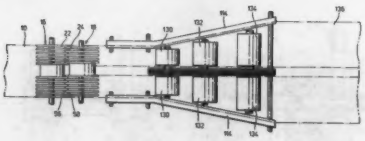
4. A jet stuffer crimper comprising laterally confining means for receiving and temporarily accumulating funicular textile material therein, an upstream portion of the confining means being foraminous and thereby adapted to permit propellant fluid to diffuse laterally therefrom, means for forwarding textile material from the leading edge of an accumulation thereof and out of the confining means, and movable sensing means for sensing lateral diffusion of propellant fluid from the confining means and including a plurality of vanes pivotally mounted about the foraminous portion of the confining means, means biasing the vanes to inhibit diffusion of the fluid therefrom, means for controlling the speed at which the forwarding means removes textile material from the confining means, and control linkage between the deflectable vanes and the speed-control means interconnected so that increased deflection of the vanes increases the forwarding speed, and a laterally confining treatment chamber having an entrance downstream from the forwarding means, variable-speed means for taking up textile material from the treatment chamber, and control linkage between the deflectable vanes and the variable-speed means interconnected so that increased deflection of the vanes increases the takeup speed.

4,315,356

FORMING EXPANDED MESH SHEET FROM DEFORMABLE STRIP

Gordon H. Laurie, Mississauga; Theodore J. Seymour, Oakville; Randall T. Sakauye, Mississauga, and John V. Marlow, Oakville, all of Canada, assignors to Cominco Ltd., Vancouver, Canada

Division of Ser. No. 970,298, Dec. 18, 1978. This application May 22, 1980, Ser. No. 152,288
Claims priority, application Canada, Oct. 31, 1978, 315190
Int. Cl.[3] B21D *28/12, 17/00*
U.S. Cl. 29—6.1 16 Claims



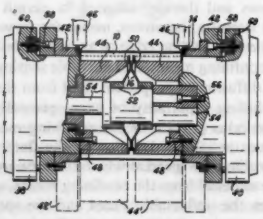
1. An apparatus for expanding metal strip comprising, in combination, a first pair of opposed rolls each having means for concurrently slitting and preforming at least a portion of said strip to provide a plurality of longitudinally extending strand-like components, said strand-like components comprising slit segments deformed out of the plane of the strip and unslit segments retained in the plane of the strip, said slit and deformed segments severed from laterally adjacent segments and substantially convexly curved from the plane of the strip whereby slit segments in laterally adjacent components extend from opposite sides of the plane of the strip and said unslit segments retained in the plane of the strip together define continuous bands extending laterally across the said portion of the strip, a second pair of opposed rolls each having means for slitting the strip at alternate bands to extend the slits in a staggered relation, and means for expanding the slit and preformed portion of the strip to form meshes by drawing opposite longitudinal edges of the strip apart whereby the curved segments are substantially straightened to form webs of the mesh joined by nodes formed by unslit portions of the bands.

4,315,357

APPARATUS FOR THE CONSTRUCTION OF FAN WHEELS OF THE DOUBLE-ASPIRATOR TYPE

Michele Calvano, Bergamo, Italy, assignor to Aertermica Nicotra S.p.A., Italy

Continuation of Ser. No. 20,703, Mar. 15, 1979, abandoned. This application Dec. 18, 1980, Ser. No. 217,839
Claims priority, application Italy, Mar. 21, 1978, 21419 A/78
Int. Cl.[3] B23P *11/00, 15/00, 21/00*
U.S. Cl. 29—23.5 12 Claims



1. In combination with an apparatus for the manufacture of a fan wheel having a plurality of inclined elongated blades cylindrically mounted to a pair of end rings and at least one disk centrally keyed onto the blades and carrying a fan wheel hub, a press for fixing the end rings, the disk and the blades to each other, and a blade feed conveyor belt for carrying the required number of blades, to be assembled on the fan wheel, spaced at a distance corresponding to the position of the blades when assembled on the fan wheel, and for feeding the blades to the press, the improved press comprising two horizontally spaced components, each component being displaceable one toward the other and concurrently rotatable about a common axis, each component having a seat surface for carrying one of the end rings, each component having means for collecting and retaining the blades coming from the conveyor belt and for pressing and keying the central disk to the blades, means for flanging the end rings directly onto the ends of the blades, said components being displaceable one toward the other between an initial position and a final position through successive positions including:

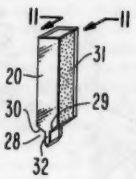
(a) a first position, above the conveyor belt, to successively rotatably collect the blades onto the components in response to rotation of the components, (b) a second position to insert the end rings onto opposite ends of the blades and to rotatably flange the rings onto said ends of the blades during continuous rotation of said components, and (c) a third position in engagement with the central disk to press and key the central disk to the blades.

4,315,358

METHOD FOR THE MANUFACTURE OF CAPACITIVE PICKUP STYLI

Rudolph H. Hedel, West Windsor, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 21, 1980, Ser. No. 142,134
Int. Cl.[3] H01G *4/06*
U.S. Cl. 29—25.42 8 Claims



1. The method for the manufacture of a capacitive pickup stylus comprising the steps of:

(a) providing a stylus blank of a dielectric material in the form of an elongated member having symmetrical diagonal cross-sectional halves along the length thereof and a pair of opposing polished faces with one face on each cross-sectional half;

(b) masking one of the cross-sectional halves along its length;

(c) applying a layer of an electrically conductive material to the other cross-sectional half whereby the polished face on the unmasked half is coated with the electrically conductive material and the polished face on the masked half is left uncoated; and

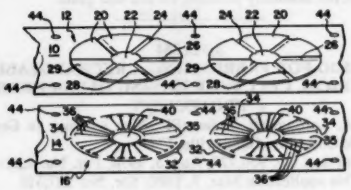
(d) machining a tip of a predetermined configuration on one of the terminal ends of the stylus blank with the electrically conductive material on the rearward surface of the stylus extending to the tip thereof and removing any conductive material deposited on other surfaces of the stylus blank in an amount sufficient to effectively insulate the conducting material on the other surfaces from the tip of said stylus.

4,315,359

HYDRODYNAMIC COMPLIANT THRUST BEARING AND METHOD OF MAKING

Stanley Gray, Skaneateles, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Division of Ser. No. 974,259, Dec. 29, 1978, Pat. No. 4,225,196. This application Apr. 25, 1980, Ser. No. 143,543
Int. Cl.³ F16C *32/06*, *39/04*; B21D *53/10*
U.S. Cl. 29—149.5 A 3 Claims



1. A method of making a compliant hydrodynamic fluid thrust bearing, comprising:

stamping a series of annular sections into a sheet of metal, said sections each including a plurality of angularly adjacent truncated sector-shaped pads, each separated from the adjacent pads by radially extending vanes;

stamping a plurality of annular patterns into a second sheet of metal, said patterns each including a plurality of resilient raised projections, said projections being arranged in a plurality of angularly adjacent clusters, said clusters being separated by radially extending vanes;

superimposing said first and second sheets, with said clusters of projections vertically aligned with said pads, and the vanes of said first and second sheets vertically aligned;

welding the vanes of said first and second sheets together; and

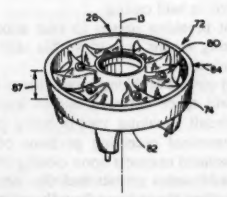
shearing the assembled and welded annular sections from the two sheets.

4,315,360

TRUCK HUB AND METHOD OF BANDING SAME

William E. Carmichael, 2592 McBride Crescent, Prince George, B. C., Canada (V2M 2A1), and Wayne Rodacker, 9816-105 St., Grande Prairie, Alberta, Canada (T8V 4K3)

Filed Sep. 13, 1979, Ser. No. 75,514
Int. Cl.³ B21K *1/34*
U.S. Cl. 29—159.03 6 Claims



1. A method of making a banded truck hub from an existing truck hub, in which the existing hub has a central boss with a central axis, a plurality of spokes extending from the boss, and webs extending between the spokes; each spoke having a pair of side portions and a front portion blending smoothly together so as to be generally U-sectioned, each spoke also having an outer end having a partially cylindrical outer end face adapted to fit adjacent a tire rim, the outer face being defined in part by front and rear edge portions and outer margins of the side portions of the spokes; the method being characterized by:

(a) removing from the outer end of each spoke adjacent the rear edge portion a generally U-sectioned portion of the cylindrical outer face and adjacent portions of the side portions of the spoke adjacent the outer margin thereof, thus forming a pair of spaced shoulders on the side portions of the spoke, the shoulders being defined by exposed generally axial edges of the side portions spaced generally equally from the central axis and also being defined by exposed generally radial edges of the side portions which are coplanar with an exposed partially annular edge of the cylindrical outer end face of the spoke,

(b) fitting, as a preformed ring, an annular rim onto the shoulders of each spoke, so that an inner face of the rim is adjacent the exposed generally axial edges of the side portions, and a generally annular end face of the rim is adjacent the generally radial edges of the side portions and the partially annular edges of the outer cylindrical faces of the spokes,

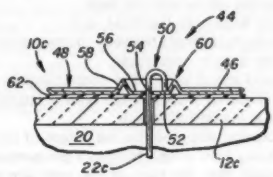
(c) welding the annular rim to the spokes so as to form a spoked hub with a banded rim.

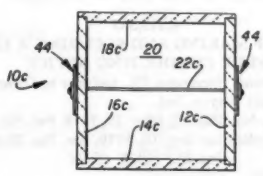
4,315,361

METHOD OF REINFORCING A DUCT

Ray G. Brooks, Irving, Tex., assignor to Malco Products, Inc., Annandale, Minn.

Division of Ser. No. 1,177, Jan. 5, 1979, Pat. No. 4,237,940. This application Jun. 30, 1980, Ser. No. 164,764
Int. Cl.³ B23P *11/00*
U.S. Cl. 29—432.1 4 Claims





1. A method for reinforcing a duct comprising, in combination:

bending one end of a substantially straight stiff wire to form a hook;

placing a support washer against one side of the duct so that an outer face of the support washer faces away from the duct;

inserting the substantially straight end of the wire through the support washer, the adjacent side of the duct, and the opposite side of the duct until the tip of the hooked end of the wire substantially opposes the outer face of the support washer;

placing a second support washer over the substantially straight end of the wire against the side of the duct so that an outer face of the second support washer faces away from the duct;

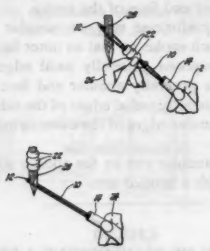
cutting the portion of the wire protruding beyond the second support washer to a predetermined length; and

bending the portion of the wire protruding beyond the second support washer to form a hook with the tip of the portion of the wire protruding beyond the second support washer substantially opposed to the second support washer.

4,315,362
METHOD AND TOOL FOR PLACING BEADS ON A BRAID OF HAIR

James W. Pigford, and Carolyn J. Green, both of 367 N. Maple, Ann Arbor, Mich. 48103

Filed Jul. 28, 1980, Ser. No. 172,711
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—433 5 Claims



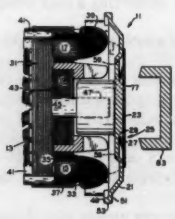
1. A method for placing a bead on a braid of hair, comprising the steps of:
folding a stranded metal flexible wire cord so as to form a pair of resilient cord halves connected by an acute angle permanently bent elbow;
passing the elbow through the opening of a bead;
passing the braid through the two halves of the wire cord between the elbow and the bead;
pushing the bead onto the braid; and
removing the braid from between the two wire cord halves.

5. A beader device, comprising:
an elongated metal wire cord comprising strands of wire twisted together such that the cord is laterally uniformly resilient along its full length;
a plastic coating disposed the full length of the wire cord;
the cord being bent in half to form a permanent acute angle elbow such that the ends of the cord are adjacent one another; and
a handle connected to the adjacent ends of the cord.

4,315,363
METHOD OF MAKING AND SECURING A LEAKAGE FLUX CONDUCTING DEVICE

Michael R. Barone, Sycamore, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 886,672, Mar. 15, 1978, Pat. No. 4,233,535.
This application Sep. 10, 1979, Ser. No. 73,926
Int. Cl.³ H02K *15/14*
U.S. Cl. 29—596 12 Claims

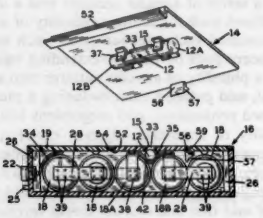


1. A method of making a leakage flux conducting device and securing it to a non-ferrous end plate of a prime mover so that the device conducts generally across the end plate leakage flux emanating from a magnetic field established between a pair of opposite pole winding means of the prime mover upon the energization thereof, the method comprising the steps of:
(a) forming the device with a mass great enough to remain unsaturated with respect to the conducted leakage flux and lancing from the device a plurality of generally elongate deformable fingers each having a free end portion;
(b) arranging the free end portions of the finger plurality with a plurality of associated parts therefor on the end plate; and
(c) moving the device to its preselected assembly position on the end plate and deforming the fingers of the finger plurality so as to urge the free ends thereof into gripping engagement with the associated parts plurality on the end plate thereby to oppose the displacement of the device from its preselected assembly position on the end plate.

4,315,364
METHOD FOR FABRICATING A RECHARGEABLE ELECTRICAL CELL PACK HAVING OVER-CURRENT PROTECTION

Edward A. Leffingwell, Gainesville, Fla., assignor to General Electric Company, Gainesville, Fla.

Division of Ser. No. 930,727, Aug. 3, 1978, Pat. No. 4,217,400.
This application Mar. 5, 1980, Ser. No. 127,316
Int. Cl.³ H01M *14/00, 2/04*
U.S. Cl. 29—623.1 8 Claims



1. A method for fabricating an electrochemical cell pack comprising:
providing a casing having positive and negative terminals at the exterior thereof for connection to an external circuit;
positioning a plurality of electrochemical cells in a base portion of said casing, at least two of said cells being positioned to define a space between said at least two of said cells;
providing means for interconnecting said cells in a series circuit between said casing terminals, said series circuit being provided with a pair of electrically isolated contacts, each of said electrically isolated contacts having a terminal portion positioned in said space between said at least two of said cells;
providing a door in said casing;
securing circuit breaking means to said door so that said circuit breaking means is held within said casing when said door is closed;
positioning said circuit breaking means for at least partially occupying said space between said at least two of said cells, said circuit breaking means being positioned between said terminal receiving portions of said pair of electrically isolated contacts upon closing of said door for completing said series circuit and for interrupting said series circuit when the current flow therethrough exceeds a predetermined level.

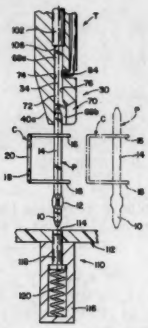
4,315,365
TERMINAL POST INSERTING COMPONENT

Jon Wigby, Pennsylvania Furnace, Pa., assignor to Elco Corporation, El Segundo, Calif.

Filed Apr. 14, 1980, Ser. No. 140,182
Int. Cl.³ H05K *3/30*
U.S. Cl. 29—739 23 Claims

1. A component for inserting a terminal post into an opening therefor in a substrate, comprising an elongate body having

opposite ends, one of said ends including an end face and a post receiving passageway extending into said body from said end face toward the other of said opposite ends, said passageway having an axis and outer and inner portions with respect to said end face, said outer portion extending into said body from said end face, said one end further including a post entry slot extending radially into said body and said end face and opening into said outer portion of said passageway, said outer portion



of said passageway including wall means having a cross-sectional contour for a terminal post received through said slot to be confined in the direction of entry through said slot and laterally of said direction and positioned for axial movement from said outer into said inner portion of said passageway, and post retention means in said inner portion of said passageway for retaining a terminal post in said inner portion upon axial movement of said post thereinto.

4,315,366

METHOD OF MANUFACTURING MICROMINIATURE SOLID STATE DEVICES

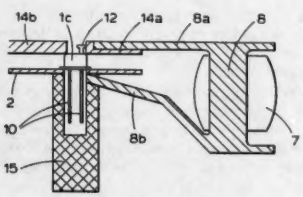
Jan T. Palmer, West Wellow, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 31, 1979, Ser. No. 7,854

Claims priority, application United Kingdom, Feb. 10, 1978, 05436/78

Int. Cl.³ H01R *43/00*

U.S. Cl. 29—854 **18 Claims**



1. A method for manufacturing a microminiature solid state device comprising the steps of transporting a header of the device into a work area with approximately a desired orientation and accurately orienting said header in said work area by magnetically attracting at least a part of said header and pulling at least two lead pins of said header into engagement with an abutment made of a non-magnetizable material wherein said two lead pins extend through said header to form posts above said header and terminal leads below said header, and a magnet is located at an area adjacent to said posts to provide magnetic attraction with one pole of said magnet being at the area of said posts and an opposite pole of said magnet being at the area of said terminal leads.

4,315,367

METHOD FOR EFFECTING CLAMPING ENGAGEMENT

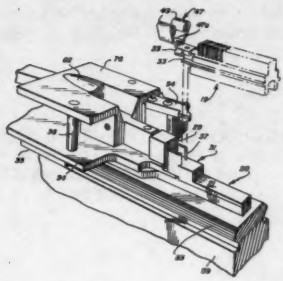
Jacob S. Haller, Northbrook; Gordon L. Mines, Elmhurst, and Meinert J. Mischnick, Mount Prospect, all of Ill., assignors to TRW Inc., Elk Grove Villiage, Ill.

Division of Ser. No. 890,671, Mar. 27, 1978, Pat. No. 4,193,187.

This application Mar. 17, 1980, Ser. No. 130,652

Int. Cl.³ H01R *43/04*

U.S. Cl. 29—866 **8 Claims**



1. A method of terminating conductors emanating from a cable in contacts disposed in an electrical connector having a deformable, cable-engaging clamp mounted thereon in which a cable to be clamped is disposed, said terminating taking place at a terminating station, comprising the steps of moving said connector from a first station along a path of travel on guide means extending from such first station to such terminating station, and automatically urging said clamp into clamping engagement with said cable in the course of said connector movement along said path of travel.

4,315,368

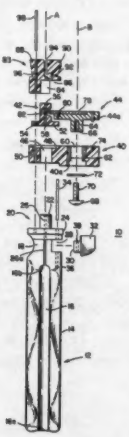
OPTICAL FIBER CLEAVING APPARATUS

Rocco F. Basile, Roselle, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Jan. 14, 1980, Ser. No. 111,844

Int. Cl.³ B25F *3/00*

U.S. Cl. 30—124 **10 Claims**



1. Optical fiber cleaving apparatus comprising:

fiber support means having an elongate channel for supporting a fiber and including fiber shroud means having a fiber guide passage in longitudinal registry with said channel,

said shroud means defining an opening in communication with said fiber guide passage, said shrough means being fixed in non-rotative disposition relative to said channel longitudinal axis; and

fiber cleaving means supported by said fiber support means for rotation about an axis parallel to and spaced from the longitudinal axis of said channel, said cleaving means rotational axis being fixed in non-rotative disposition relative to said channel longitudinal axis, said cleaving means having a cutting element movable from a position exterior said fiber guide passage through said opening in said fiber shroud means and into said fiber guide passage on such rotation.

4,315,369

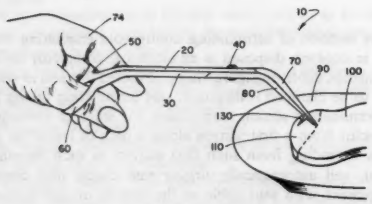
FOOD CUTTING AND GRASPING IMPLEMENT

Maxwell Borow, 73 Hillcrest Rd., Martinsville, N.J. 08836

Filed Jun. 9, 1980, Ser. No. 157,850

Int. Cl.³ B26B *13/00*

U.S. Cl. 30—257 **3 Claims**



1. A scissors-like apparatus for use by a one-handed person to cut food and direct the cut food to the person's mouth comprising

two blades pivotably coupled together and having parallel, overlying, generally central portions which lie in a first plane,

said blades having a finger hole portion at one end of each,

said blades having a bent portion and also having overlying cutting end portions which perform a cutting function and are located remote from said finger hole portions, said cutting end portions of said blades lying completely in a second plane which is bent at an angle to said first plane and extend to said bent portion whereby, when the central portions of said blades are disposed horizontally and spaced above a food plate during a food cutting operation, said cutting end portions slant downwardly toward and can touch a food plate and the cutting portions can be used to cut food and then grasp the cut food to bring it to the person's mouth.

4,315,370

COMBINED SAW CHAIN TENSION ADJUSTER AND SAW CHAIN GUARD

David Horne, Staines, England, assignor to Black & Decker Inc., Newark, Del.

Filed Jul. 10, 1980, Ser. No. 168,379

Claims priority, application United Kingdom, Jul. 13, 1979, 24517/79

Int. Cl.³ B27B *17/14*

U.S. Cl. 30—386 **4 Claims**

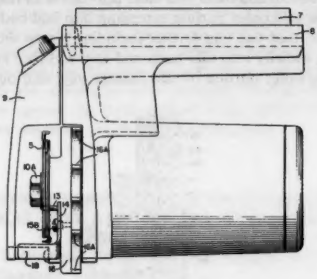
1. A chain saw having:

a chain bar upon which is mounted a cutting chain; and

a lever for tensioning the cutting chain;

characterized in that:

the tensioning lever is configured to obstruct the cutting chain in the event of a breakage thereof;



thereby substantially shortening the length of the cutting chain thrown back toward the operator.

4,315,371

PRESET BRAKE DEVICE FOR LINE DRAWING MACHINE, DRAFTING MACHINE OR LIKE

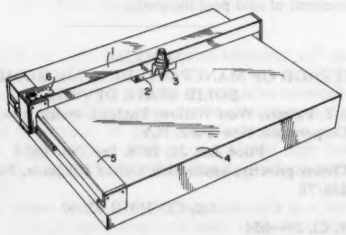
Sadahiko Kotani, Fujimi, and Yoshitaka Gibu, Nakaitabashi, both of Japan, assignors to Asahi Seimitsu Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 11, 1980, Ser. No. 111,201

Claims priority, application Japan, Jan. 12, 1979, 54-2533

Int. Cl.³ B25H *7/04*; G01B *5/14*

U.S. Cl. 33—1 M **9 Claims**



1. A line drawing machine, comprising:

guide rail means disposed on said line drawing machine for guiding the movement of a line drawing instrument mounted thereon;

movable body means movable along said guide rail means for holding said line drawing instrument therein;

preset input station means disposed on said guide rail means for introducing a preset amount into said line drawing machine representing a desired amount of movement of said movable body means along said guide rail means and for generating an output signal representative of said desired amount of movement;

detector means disposed within said movable body means for detecting the amount of movement of said movable body means relative to said guide rail means and generating an output signal in response thereto;

means responsive to said output signals from said preset input station means and said detector means for determining when the amount of movement of said movable body means relative to said guide rail means is approximately equal to said preset amount introduced into said preset input station means and for generating a coincidence signal in response thereto; and

electromagnetic brake assembly means disposed within said movable body means and responsive to said coincidence

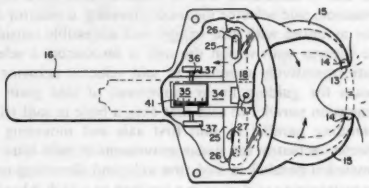
signal for arresting the movement of said movable body means relative to said guide rail means.

4,315,372

CALIPER FOR APPLYING CONSTANT PRESSURE TO AN OBJECT BEING MEASURED

Jordan A. Kinkead, Atherton, Calif., assignor to Fitness Motivation Institute of America, San Jose, Calif.

Filed Apr. 17, 1980, Ser. No. 142,211
Int. Cl.[3] G01B 5/00
U.S. Cl. 33—148 F 8 Claims



1. A caliper for applying a constant pressure to the surface of an object to measure the object thickness, said caliper comprising:

a housing;

a pair of caliper arms each having a first end pivotally connected to said housing and having a second end abutting the second end of the other caliper arm and separable therefrom by pivoting said arms about the pivotal connections;

a slide mechanism held on said housing and connected to each such caliper arm by a sliding pivotal connection at a point intermediate the ends; and

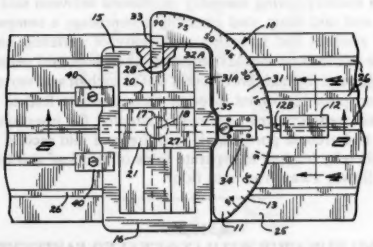
a constant tension spring connected to said slide mechanism to urge said caliper second ends into abutting relationship whereby movement of the slide mechanism will cause the caliper arm second ends to separate and be urged back together by said constant tension spring to measure the thickness of the object therebetween.

4,315,373

MACHINE VISE PROTRACTOR

John D. Lenz, Coon Rapids, Minn., assignor to Kurt Manufacturing Company, Inc., Minneapolis, Minn.

Filed Feb. 25, 1980, Ser. No. 124,465
Int. Cl.[3] G01B 3/56, 5/24
U.S. Cl. 33—174 TD 9 Claims



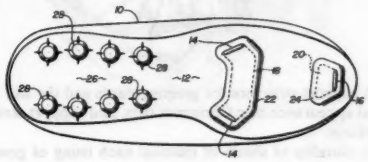
1. For use in connection with a machine vise having means for establishing a central upright rotational axis permitting rotation of such vise relative to a table with which such vise is used, the improvement comprising a protractor plate for use with such vise having an outer edge formed about a circle center, and having angle indicating indicia indicating angles about such circle center adjacent said outer edge, said protractor plate having inner edge portions positioned adjacent such vise, and releasable interlocking means cooperating between the protractor plate inner edge portions and the vise to releasably retain the protractor plate relative to such vise with the circle center substantially coinciding with the central upright rotational axis of such vise.

4,315,374

BASEBALL SHOE

Andrew M. Sneeringer, 529 Main St., McSherrystown, Pa. 17344

Filed Jun. 2, 1980, Ser. No. 155,566
Int. Cl.[3] A43B 5/00, 23/28; A43C 15/00
U.S. Cl. 36—126 3 Claims



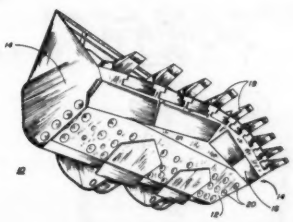
1. A baseball shoe comprising in combination an upper shoe body, a unitary sole and heel molded from homogeneous material of limited flexibility similar to that of sole leather and affixed to the bottom of said body, metal base plate means enclosed within said sole and provided with integral metal blade-like spikes arranged in a triangular pattern with one spike near the outer tip of the sole and said spikes projecting perpendicularly from said base plate through said sole for ground-gripping when running to and from bases, and a cluster of blunt plug-like cleats molded integrally with said heel from the material of said sole and projecting therefrom in a pattern to afford ground-gripping capability in the heel area of the shoe but non-injurious to human personnel or base bags when sliding feet-first into a base bag, and said cluster of blunt plug-like cleats being in slightly curved rows disposed adjacent opposite sides of said heel.

4,315,375

EARTH MOVING BUCKET

Raymond R. Shinn, P.O. Box 534, Jordan Valley, Oreg. 97910

Continuation-in-part of Ser. No. 51,534, Jun. 25, 1979, abandoned. This application Jul. 21, 1980, Ser. No. 170,884
Int. Cl.[3] E02F 3/00
U.S. Cl. 37—118 R 3 Claims



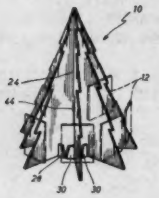
1. An earth moving bucket having a bottom wall, opposing sidewalls and a back wall wherein at least one wall includes a plurality of substantially hemispherical wear resistant members bonded to the outer earth-contacting surface of the wall in staggered relationship one to the other and wherein the wall to which the hemispherical members are bonded is of substantially 315–330 units hardness on the Brinell scale and wherein said hemispherical members are from substantially 370 to 410 units of Brinell hardness on the same scale.

4,315,376

DISPLAY DEVICE FOR GREETING CARDS

Larry Eichenauer, 6927 Long Point, Houston, Tex. 77050

Filed Dec. 1, 1980, Ser. No. 211,521
Int. Cl.³ G09F *1/10, 3/18;* A63H *33/10;* A01N *3/00*
U.S. Cl. 40—124.4 5 Claims



1. A support structure for greeting cards and the like in the general appearance of a Christmas tree, said support structure comprising:

(a) a plurality of sheets of material each being of generally triangular form and having slots formed therein, said sheets being positionable in interlocking intersecting relation at said slots and cooperating to form a self-standing generally triangular three dimensional structure generally in the form of a Christmas tree, each of said sheets being formed at the outer portions thereof to define a plurality of upwardly opening card slots each adapted to receive and support a greeting card in upstanding position for visual inspection; and

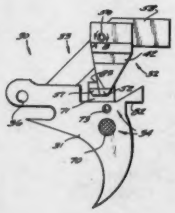
(b) a generally horizontal base structure formed of sheet material having twice as many sides as the number of said plurality of sheets, said base structure defining a sheet orienting tab at each of said sides, each of said sheet orienting tabs extending upwardly from said base structure and defining a sheet orienting slot therein, the lower portions of each of said plurality of sheets being received by said sheet orienting slots of two of said sheet positioning tabs and being angularly oriented in predetermined relation by said tabs with respect to adjacent ones of said sheets.

4,315,377

SINGLE TRIGGER FIRING OF DOUBLE BARREL SIDE-BY-SIDE OR OVER-UNDER FIREARMS

Jack J. Jenkins, 462 Stanford Pl., Santa Barbara, Calif. 93111

Filed Oct. 29, 1979, Ser. No. 89,629
Int. Cl.³ F41C *19/00*
U.S. Cl. 42—42 R 14 Claims



1. A single trigger firing mechanism insertable as an integral unit into operative association with a double barrel side-by-side or over-under firearm having a pair of sears, said integral unit firing mechanism consisting essentially of

a single trigger having means formed on an anterior portion thereof for mounting it for rotation about a first axis with respect to a firearm with which it is associated;

connector means having a pair of distinct sear-supporting surfaces thereon for cooperation with the pair of sears of the firearm with which said connector means is associated for supporting or releasing same;

means for mounting said connector means for pivotal movement, with respect to the rest of the unit, about a second axis generally parallel to said first axis, and for tilting movement, with respect to the rest of the unit, about a third axis generally perpendicular to said first and second axes; and

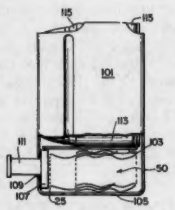
selector means for effecting tilting movement of said connector means about said third axis to thereby select which of the sears of the pair of sears of the firearm with which the unit is associated will be released first upon trigger actuation, said selector means comprising: a selector actuator mounted with said trigger and accessible outside of the firearm with which the unit is associated; a selector plate operatively mounted to said selector actuator and means for guiding linear movement of said plate in a dimension parallel to said first axis; a bore in said trigger extending parallel to said first axis and mounting said selector actuator for linear movement in said bore in a dimension parallel to said first axis; and detenting means for maintaining said plate in a position to which it has been moved in said dimension of movement thereof.

4,315,378

INACTIVE SPRING ASSEMBLY

Daniel D. Musgrave, 8201 Caraway St., Cabin John, Md. 20731

Continuation-in-part of Ser. No. 968,215, Dec. 11, 1978, Pat. No. 4,205,474. This application Jul. 6, 1979, Ser. No. 55,357
Int. Cl.³ F41C *25/02;* F16F *1/18, 1/22*
U.S. Cl. 42—50 14 Claims



14. A cartridge magazine for a firearm comprising: a casing for storing a stack of cartridges, said casing including an exit port with at least one lip; a follower in said casing adapted for urging said stack toward said port; a floor affixed to said casing; an inactive spring assembly positioned between said follower and said floor, said assembly comprising; a compactly folded resilient leaf including a plurality of vertexes; nested arcuate portions on said leaf adjacent to each of said vertexes; a first passage formed through said leaf at each of said vertexes; a second passage formed through each alternate fold of said leaf; and wedge means positionally adapted for insertion between said arcuate portions via said first and said second passages thereby tending to separate folds of said leaf and thrust said follower away from said floor.

4,315,379

HAND GUN GRIP WITH CONCEALED FASTENERS

Alan J. Lang, 26025 Scott Rd., Sun City, Calif. 92381

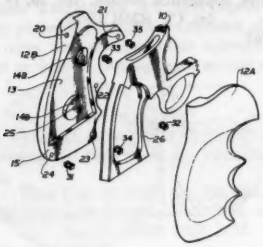
Filed Feb. 19, 1980, Ser. No. 122,567
Int. Cl.³ F41C *23/00*
U.S. Cl. 42—71 P 6 Claims

1. A hand grip for hand guns comprising a pair of elastomeric grip parts including mating parts defining a common cavity therebetween for receiving the butt portion of the frame of a handgun;

said mating grip parts, including matching recesses having

lips defining a narrow entrance opening for an enlarged recess;

a plurality of fasteners having enlarged heads and narrower shanks for positioning in respective matching recesses



with enlarged heads engaging the lips of the recesses to maintain the grip parts together about the frame of the hand gun;

said fasteners concealed within said grip when assembled on a handgun.

4,315,380

METHOD OF PROCESSING SEEDS OR CEREAL TO ACCELERATE NATURAL GERMINATION

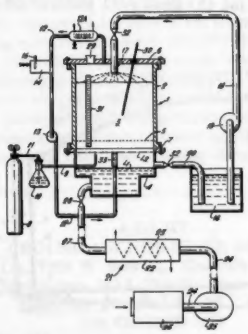
Maxwell W. Davidson, Edinburgh, Scotland, assignor to Maxwell Davidson Limited, Edinburgh, Scotland

Filed Dec. 6, 1979, Ser. No. 100,742

Claims priority, application United Kingdom, Jul. 22, 1976, 30498/76; France, Jun. 13, 1978, 78 17592; Fed. Rep. of Germany, Jun. 20, 1978, 2826907

Int. Cl.³ A01B 79/00

U.S. Cl. 47—58 4 Claims



1. A method of pregerminating seeds to break seed dormancy to accelerate sprouting at a later period comprising steeping a bed of seeds in a body of oxygenated water, controlling the temperature of the bed during the steeping, draining the body of water from the bed and holding the seeds in a gaseous atmosphere maintained with an oxygen content ranging from at least 33 to about 100% oxygen by volume whereby putrefaction of such seeds by the development of anaerobic conditions therein is prevented.

4,315,381

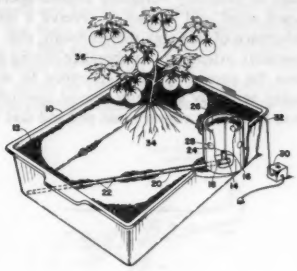
AUTOMATIC HYDROPONIC GARDEN

Stuart R. Dvorin, 742 Appleberry Dr., San Rafael, Calif. 94903

Filed Jan. 24, 1980, Ser. No. 114,989

Int. Cl.³ A01G 31/02

U.S. Cl. 47—59 9 Claims



1. An automatic, immersion hydroponic garden, which comprises:

(a) a container for water and growing medium,

(b) water and growing medium in said container to at least a predetermined level in said container,

(c) a mixing chamber for air and the water in said container and having a water inlet proximate the bottom of said chamber, an air inlet and an outlet for the air and water in admixture proximate the top of said chamber, and below the predetermined level in the container,

(d) a water inlet tube connected to the water inlet of said chamber, extending along the bottom of said container, and having a plurality of apertures into which water may flow,

(e) means for supplying air to the air inlet of said mixing chamber, and

(f) an air and water mixture dispersing enclosure surrounding said mixing chamber and having a plurality of apertures through which water and air from said mixing chamber may be dispersed below the predetermined level in the container into said water and growing medium container.

4,315,382

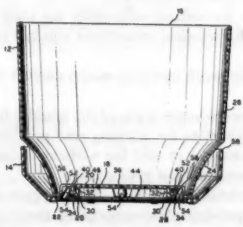
PLANT CONTAINER

Arthur H. Kay, Schaumburg, and Ted Dziewulski, Rosemont, both of Ill., assignors to Phillips Petroleum Co., Bartlesville, Okla.

Filed Nov. 26, 1979, Ser. No. 97,247

Int. Cl.³ A01G 9/02

U.S. Cl. 47—66 22 Claims



1. A container for plants or the like comprising:

a tray having a generally flat bottom portion and a rib upstanding from the bottom portion and interrupted at a plurality of positions;

a plurality of upwardly extending protuberances extending

from the bottom portion of said tray each positioned adjacent an interruption in the rib;

a pot having a generally flat bottom portion and a downwardly extending rib extending downwardly from the bottom portion of said pot;

a plurality of generally vertically aligned apertures in said pot each sized and shaped to receive a corresponding protuberance of said tray therethrough; and

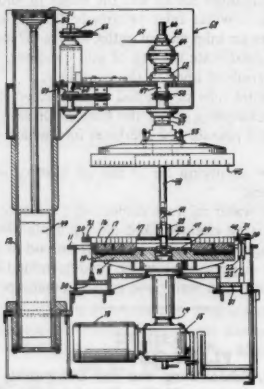
each upwardly extending protuberance having detent means thereon for providing an interference fit with a corresponding generally vertically aligned aperture in said pot so as to releasably connect said pot and said tray.

4,315,383

INNER GEAR DRIVE FOR ABRADING MACHINES

Lawrence Day, Mount Prospect, Ill., assignor to Spitfire Tool & Machine, Co. Inc., Chicago, Ill.

Filed May 13, 1980, Ser. No. 149,347
Int. Cl.³ B24B *5/00*
U.S. Cl. 51—118 **8 Claims**



1. In an abrading machine comprising,

(a) upper and lower ringlike lap plates, each having an annular lap surface parallel to each other,

(b) means for independently rotating each of said lap plates about its own vertical axis,

(c) means supporting said upper lap plate and its rotating means for vertical movement relative to said lower lap plate,

(d) gearlike work carrying means carried on said lower lap plate,

(e) gear means in the plane of the annular lap surface of said lower lap plate for rotating said gearlike work carrying means relative to said lap surfaces independently of the rotation of said lap plates, and

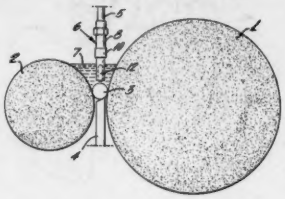
(f) an overhead drive means for said gear means carried by said upper lap plate supporting means and including a rotatable drive shaft freely journalled through the center of said upper lap plate and said supporting means and being connected to said gear means for rotating the same in the plane of the annular lap surface of said lower lap plate, independently of the rotation of said upper and lower lap plates.

4,315,384

COOLING DEVICE IN A GRINDING MACHINE

Bengt Roos, Lidköping, Sweden, assignor to Lidkopings Mekaniska Verkstads AB, Sweden

Filed Feb. 26, 1980, Ser. No. 124,816
Claims priority, application Sweden, Apr. 20, 1979, 7903471
Int. Cl.³ B24B *55/02*
U.S. Cl. 51—267 **5 Claims**



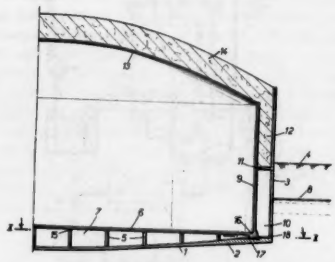
1. In a grinding apparatus comprising a grinding wheel rotatable about a generally horizontal axis and having a peripheral envelope surface for contacting and grinding a workpiece, means for cooling the grinding wheel and workpiece including means supplying a cooling agent under pressure to the grinding zone comprising an elongated manifold connected to a cooling agent supply source and extending generally parallel to the axis of the grinding wheel and a pair of spaced discharge nozzles confronting one another disposed above the contact of the grinding wheel and workpiece and radially outwardly of the envelope surface of the grinding wheel to supply cooling agent to the grinding zone in such amounts and with such a pressure that a mainly homogeneous mass of cooling agent is established between said nozzle openings, the mass contacting the ground surface of the workpiece and the envelope surface of the grinding wheel.

4,315,385

HIGH-SAFETY CONTAINER

Philippe J. Moreau, Neuilly-sur-Seine, and Jacques G. A. Monsterleet, Marly-le-Roi, both of France, assignors to Campenon Bernard Cetra & Constructions Metalliques, Neuilly-sur-Seine, France

Filed Feb. 21, 1979, Ser. No. 14,006
Claims priority, application France, Mar. 1, 1978, 78 05850
Int. Cl.³ E04B *1/32*; E02D *27/00*
U.S. Cl. 52—80 **16 Claims**



1. A high-safety container for housing dangerous products or installations, said container comprising a combination of:

(a) a tank including an inner side wall, a floor and a top which define a storage enclosure,

(b) a continuous leak-proof foundation basement including a downwardly bulging cupola having an upper concave face and a convex undersurface exposed throughout to external upwardly-directed hydrostatic-like thrust,

(c) said tank floor being disposed above and spaced from the

upper concave face of said downwardly bulging cupola to define a lower ventilating gap therebetween,

(d) pillar means extending between the tank floor and said upper concave face to support said tank over the cupola, and

(e) an outer wall integral with said cupola to form an upwardly projecting peripheral extension of the cupola,

(f) said outer wall and said inner sidewall being laterally spaced to form an annular space around said tank.

4,315,386

PORTAL BUILDING STRUCTURES

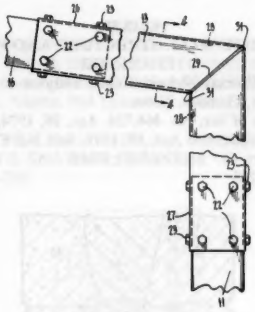
Garry W. Clarke, 847 High Street Rd., Glen Waverley, Victoria, Australia

Filed Dec. 13, 1979, Ser. No. 103,517

Claims priority, application Australia, Dec. 13, 1978, PD7104

Int. Cl.³ E04B *7/02, 2/32*

U.S. Cl. 52—93 **16 Claims**



1. A portal building frame comprising a pair of spaced substantially C-shaped cross-sectioned, upright columns, a pair of knee connectors engaged with upper ends of the columns and a substantially C-shaped roof frame member spanning between the knee connectors, the knee connectors each having a column engaging leg and a roof support leg, both legs being of substantially C-shaped cross-section and being of dimensions to closely telescopically interfit the respective column and roof frame member with the web portions of the sections lying in a substantially vertical plane, each of the legs of each knee connector being mitre cut at an angle whereby the roof support leg extends at the desired roof pitch angle when the mitred cut ends are interengaged, and a stiffening plate disposed between the mitred cut ends of both legs and welded to the web portion and flange portions of both legs, the columns, knee connectors and roof frame member being secured together with fasteners through engaging webs and engaging flanges of the components.

4,315,387

GROUND ANCHOR STAKE DEVICE

John W. Lee, 7805 W. 96th St., Zionsville, Ind. 46077, and Benton Schrougham, 243 S. 25th St., Beech Grove, Ind. 46107

Filed Mar. 17, 1980, Ser. No. 131,209

Int. Cl.³ E02D *5/74*

U.S. Cl. 52—156 **16 Claims**

1. An anchor stake device, comprising a movably interconnected first body member means and a second body member means;

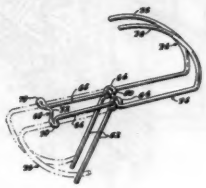
the first body member means having a first arm means and a spike means, the said first arm means and the said spike means being regidly interconnected to one another in a relative position such that they are maintained at an angle with respect to one another;

and the second body member means having a second arm means and a tine means, the said second arm means and the said tine means being rigidly interconnected;

the said tine means being connected to the second arm means adjacent a first end of the said second arm means;

means movably interconnecting the first and second body members by movably interconnecting the second end of the second arm means of the second body member means to the first body member means adjacent the interconnection of the first arm means means and the spike means but remote from the tethering means set forth below;

tethering means by which an associated support member is to be supportingly connected to the anchor stake device;



the ends of both the spike means and the tine means being free for pushing into the ground, on the ends thereof remote from the first arm means and the second arm means, respectively;

the tine means being of curcular arcuate form having its radius of curvature generally coincident with the axis of the said movably interconnecting means;

the anchor stake device being insertable in the ground by pushing the said spike means into the ground by pushing onto the said first arm means, then pushing the said tine means into the ground by pushing on the said second arm means until the said second arm means comes into substantial ground-engaging parallelism with the said first arm means.

4,315,388

METHOD AND SYSTEM FOR MOUNTING A HEAVY SPHERICAL CONTAINER SHELL ON A FOUNDATION

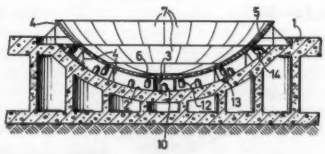
Fritz Ramseyer, Elgg, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Nov. 14, 1979, Ser. No. 93,998

Claims priority, application Switzerland, Nov. 24, 1978, 12053/78

Int. Cl.³ E04H *14/00*; E04B *1/36*

U.S. Cl. 52—173 R **20 Claims**



1. An apparatus for mounting a heavy spherical container shell on a foundation defining a spherical trough, said apparatus comprising

a multiplicity of props disposed in said trough

means for introducing and removing water into and from said gap for floating said shell off said props to permit removal of said props from between said shell and said trough and to thereafter lower said shell onto said resilient support means; and

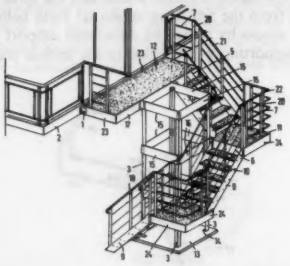
means for introducing concrete into said gap to support said shell on said trough upon setting and developing bearing strength.

4,315,389

SELF-SUPPORTING OUTER METALLIC STAIRWAY

Gilbert L. Loix, Chaussee Brunehault 22, 4462 Juprelle-Wihogne, Belgium

Filed Feb. 8, 1980, Ser. No. 119,785
Claims priority, application Belgium, Feb. 9, 1979, 874 067
Int. Cl.³ E04F *11/00*
U.S. Cl. 52—185 14 Claims



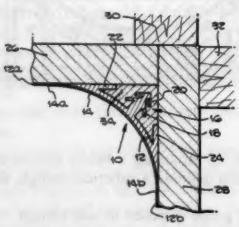
1. Outer metallic stairway, particularly made of aluminium, for multistage buildings, which is generally intended to be used for allowing the occupants of a multistage building to evacuate the building and persons to go out and/or to go in by an outside means, characterized in that it consists essentially of flights of stairs and landings fixed and supported by means of four uprights forming a column of support that are mounted vertically in a square or rectangular arrangement, the flights of stairs being fixed to at least two of the sides of the support column, the uprights being connected to one another at different levels and at least on the level of the landings by means of four horizontal tie-bars, one of which on a level with a story landing being extended beyond a second upright for supporting said landing on a whole side or to be fixed to an existing landing and to support the flight of stairs fixed to it that descends from said landing, and two of the four tie-bars that are provided on the level of an intermediate landing being extended beyond one of the uprights in order to form a part of the supporting frame of an intermediate landing, the flight of stairs descending from said intermediate landing being fixed to one of said two extended tie-bars.

4,315,390

WALLBOARD CORNERS

Michael Schaafsma, 2030 La Paloma, Tujunga, Calif. 91042

Filed Jun. 6, 1980, Ser. No. 157,284
Int. Cl.³ E04B *1/38*
U.S. Cl. 52—288 13 Claims



2. A corner strip for two perpendicularly-disposed wallboard sheets, comprising:

means, disposed between said sheets, for effecting a curvilinear transition from one of said sheets to the other of said sheets, said effecting means comprising a longitudinally-extending and transversely concave member adapted for positioning between said sheets, said concave member having longitudinally-extending feathered edges for abutting relation with said sheets;

means for anchoring said effecting means against said sheets, said anchoring means comprising means, attached to said concave member, for engaging a putty-like material placed in a corner formed by said perpendicularly-disposed sheets; and

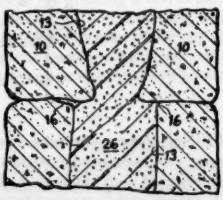
tape means, bonded to said effecting means, for overlapping and bonding to said sheets, whereby a smooth transition is achieved between said effecting means and said sheets, said tape means comprising a piece of tape extending longitudinally along said concave member and transversely past said feathered edges, whereby said concave member is held by said engaging means against said putty-like material placed in said corner, with said feathered edges and said tape effecting a smooth transition between said concave member and said sheets.

4,315,391

COMPOSITE WALL STRUCTURE AND PROCESS THEREFOR

Matthew R. Piazza, Nichols, Conn., assignor to Maso-Therm Corporation, Hamden, Conn.

Continuation of Ser. No. 464,724, Apr. 26, 1974, abandoned.
This application Apr. 15, 1976, Ser. No. 677,479
Int. Cl.³ E02D *27/00*; E04B *1/62, 2/14*
U.S. Cl. 52—293 7 Claims



1. Wall structure comprising a plurality of stacked building blocks with direct contact between contiguous blocks each block having one or more vertical cells and forming a stacked wall structure without mortar or other binder or interlocking between contiguous blocks, said stacked blocks being united into said wall structure by substantially filling the vertical cells of said blocks being solely with a material consisting essentially of rigid urethane polymer foam which is adhesively secured to the walls of said cells and which extends into the surface pores thereof and into interior vertical and horizontal seams formed by said stacked blocks, said building blocks and said rigid foam forming a hermetically sealed, monolithic, insulated composite wall structure, the rigid foam in said cells imparting lateral strength to said composite wall.

4,315,392

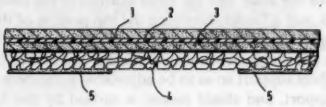
ROOF COVER SHEET MATERIAL

Erik Sylvest, Werne a. d. Lippe, Fed. Rep. of Germany, assignor to Firma Icopal Baustoffe, Werne a.d. Lippe, Fed. Rep. of Germany

Filed Oct. 11, 1979, Ser. No. 83,879
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1978, 2845700
Int. Cl.³ E04B *5/00*
U.S. Cl. 52—309.1 10 Claims

1. A roof comprising a substrate over which is disposed roof covering sheet material, between said roof covering sheet material and said substrate there being disposed a spacing means, said spacing means being in the form of a nonwoven

mat of resilient wires, thread, or fibers having an air volume exceeding 95%, said air volume being sufficient to effect air



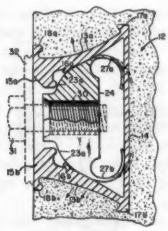
equalization, said nonwoven mat having a thickness of at least 6 mm.

4,315,393

INSERT FOR SUPPORTING HANGERS FOR CONDUIT, PIPE, CABLES, ETC., IN A CHANNEL MEMBER

James B. Schack, 13841 SE. 241st, Kent, Wash. 98031, and Timothy L. Marks, 914 Lynnwood Ave. NE., Renton, Wash. 98055

Filed Nov. 29, 1979, Ser. No. 98,472
Int. Cl.³ E04B *1/38*
U.S. Cl. 52—710 **12 Claims**



1. A removable insert for insertion in a carrier member having a U-shaped cross-section, the carrier member having a rear wall forming the base of the "U" and side walls forming the legs of the "U" and defining an entry opening therebetween, the insert connectable to supports for cables, pipes, conduits and the like comprising:

a main body having a front wall with rearwardly sloping surfaces, a rear wall and side walls joining the front and rear walls, the body of greater length than width, the width being less than the width of the entry opening between the legs of the channel member to allow insertion of the insert into the channel member, the depth of the insert being less than the depth of the channel member and the length of the insert determined by the distance between the side walls of the channel member, the length being sufficient for the sloping surfaces of the insert to contact the side walls of the channel member;

a threaded bore extending through the main body from the front wall to the rear wall for receiving a bolt therein through the entry opening of the channel member when the insert is positioned in place within the channel member; and

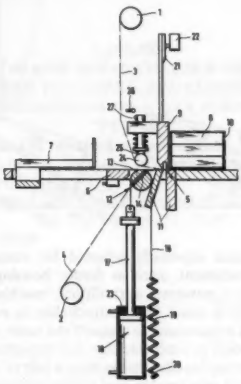
integral resilient legs extending from the rear wall of the main body adapted to contact the rear wall of the channel member and bias the sloping surfaces of the front wall of the insert into contact with the side walls of the channel member.

4,315,394

WRAP-AROUND PACKAGING MACHINE

Fritz Noack, Ottobeuren, Fed. Rep. of Germany, assignor to Emil Pester GmbH Verpackungsmaschinen, Wolfertschwenden, Fed. Rep. of Germany

Filed May 4, 1977, Ser. No. 793,894
Claims priority, application Fed. Rep. of Germany, May 28, 1976, 2623907
Int. Cl.³ B65B *11/08, 13/02*
U.S. Cl. 53—553 **1 Claim**



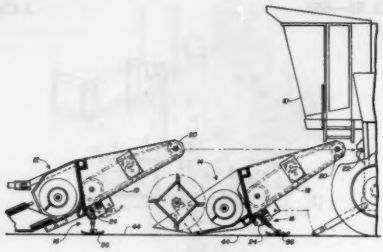
1. An improved tensioning device for use in a packaging machine for wrapping objects with a film, the packaging machine being formed by: a table for feeding objects, an upper supply roller and cooperating lower supply roller respectively above and below said feed table, a film wrapping curtain formed between said supply rollers and passing through a slit in said feed table; slide means movably arranged on said feed table for pushing said objects against said film curtain to form a film loop encasing said objects; two clamping elements mounted on either side of said feed table, one of said two clamping elements being movable into a clamping position in which two overlapping portions of said film adjacent said film loop are gripped between said two clamping elements; means for joining the two overlapping film portions by welding in a weld zone; separating means for separating the film wrapping thus formed from the rest of the film; the improvement comprising: providing a single tension roller for drawing the film loop taut around the objects, said tension roller having a top surface flush with the plane of the feed table and being arranged between said lower supply roller and the film loop, said tension roller is disposed in close proximity to the film loop at the surface of the table and is further defined by an axial slit extending along most of the axial length of the tension roller below the plane of the feed table and permanently traversed by the film immediately adjacent the film loop; the tension roller being movable to a first position to allow said slit to extend substantially in a direction of film travel enabling said film to pass substantially without obstruction from said lower supply roller through the slit to the film loop; a driving pulley affixed to the front end of the tension roller; a rope wound around said driving pulley, a first end of which being connected with a compressed-air cylinder provided with an adjustable valve for rotating said tension roller from said first position into a second position, whereby the film loop is tensioned in direct relation to the angular movement of said slit in response to rotation of said roller, and, tensioning occurs before the film portions are clamped, the second end of the rope being connected to a mechanical spring for rotating the tension roller in an opposite direction through the same rotation angle for returning said tension roller into said first position.

4,315,395

JACK STAND FOR AGRICULTURAL ATTACHMENT

Stephen E. Randall, Narvon, and Carl G. Overly, New Holland, both of PA, assignors to Sperry Corporation, New Holland, Pa.

Filed Apr. 21, 1980, Ser. No. 142,491
Int. Cl.[3] A01D *35/12*
U.S. Cl. 56—10.1 3 Claims



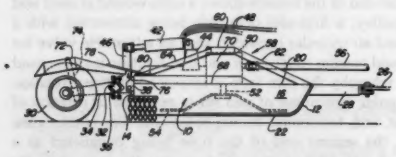
1. A jack stand especially adapted for connection to an agricultural attachment, such as feeder housings, which are connectable to a powered agricultural machine, such as a combine, said jack stand being attachable to an appropriate location on said attachment to support the same in position for ready reconnection to such machine and comprising in combination, a supporting bracket comprising a pair of parallel plates secured in spaced relationship and connectable to said attachment and respectively provided with an arcuate row of positioning sockets disposed in an arc at equal radii around a pivot on said plates, a telescoping pair of leg members adjustable longitudinally, one end of one of said leg members being pivotally connected between said plates for pivotal movement in a vertical plane, pin means cooperable with said leg members and said positioning sockets to position said pair of leg members at a desired angular position relative to said attachment, at least one of said leg members having a longitudinal row of holes transversely therethrough and the other leg member having at least one hole transversely therethrough, a pin insertable through adjustably aligned holes in said leg members when selectively adjusted longitudinally to a desired length, and a shoe connected to the outer end of the other leg member for engagement with a supporting surface, whereby the angular and longitudinal adjustment of said pair of legs respectively relative to said supporting plates and each other afford an extensive range of adjustment vertically between said supporting plate and a supporting surface engaged by said shoe, such that the maximum height is greater than twice the minimum height and still permits compact arrangement thereof when disposed in a retracted inoperative position.

4,315,396

SHIELD AND DEFLECTOR MEANS FOR ORCHARD IMPLEMENT

Ken K. Oka, St. Catharines, and John Kulak, Port Colborne, both of Canada, assignors to Deere & Company, Moline, Ill.

Filed Jul. 23, 1980, Ser. No. 171,590
Int. Cl.[3] A01D *67/00*
U.S. Cl. 56—320.1 7 Claims



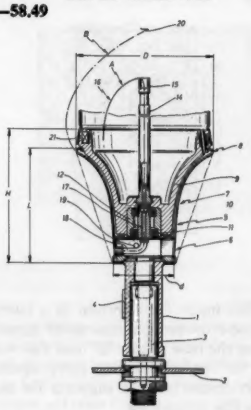
1. A tractor-drawn and -powered orchard implement having a main body including front and rear ends and opposite sides, a wheel support carried by and extending rearwardly from the rear end of the body, a ground-engaging wheel carried by the wheel support in such manner that a gap exists between the rear end of the body and the front portion of the periphery of the wheel, and a fender overlying the top portion of the wheel, charactizerized in that the wheel support, together with the wheel, is adjustable relative to the body, the fender is carried by the wheel support so as to be adjustable with the wheel and wheel support, and shield means is carried by the body and extends rearwardly in overlapping relation with the fender so as to bridge the aforesaid gap irrespective of adjustment of the wheel, wheel support and fender.

4,315,397

DEVICE FOR TWISTING A YARN BY MEANS OF A DOUBLE TWIST DEVICE

Carlos Matas Gabalda, Granges-les-Valence, France, assignor to ASA S.A., France

Filed Apr. 29, 1980, Ser. No. 144,841
Claims priority, application France, May 4, 1979, 79 11943
Int. Cl.[3] D01H *7/86*
U.S. Cl. 57—58.49 6 Claims



1. A double twist spindle comprising:

(a) a shaft adapted to be rotatably driven, the shaft having a first end to be supported on a machine frame;

(b) a package carrying assembly rotatably mounted co-axially with the shaft for rotation independently of the shaft, the assembly including a base for supporting an end of a bobbin, and a hollow axle co-axial with the shaft;

(c) retaining means for retaining the assembly against rotation with the shaft; and

(d) a bowl element fixed to a second end portion of the shaft for rotation with the shaft, the bowl element comprising a hollow bowl which is co-axial with the shaft, which extends around the package carrying assembly, and which has a conduit defining a yarn passage with a yarn outlet;

the hollow bowl having a first part which is of truncated conical shape in the region of the yarn outlet, the first part having a gradual slope, and having a further part which extends from the diverging end of the first part, the further part having a concave bell-mouthed configuration.

4,315,398

OPEN-END SPINNING APPARATUS

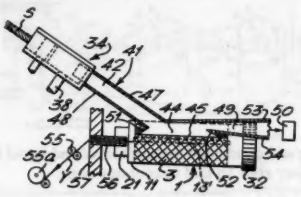
Alan Parker, Bolton, and William M. Farnhill, Burnley, both of England, assignors to Platt Saco Lowell Ltd., England

Filed Oct. 25, 1979, Ser. No. 88,262

Claims priority, application United Kingdom, Oct. 26, 1978, 42074/78; Jun. 6, 1979, 26163/79; Aug. 4, 1979, 27245/79

Int. Cl.³ D01H 1/12, 7/898

U.S. Cl. 57—58.95 28 Claims



1. An open end yarn spinning apparatus comprising

a yarn formation surface,

fiber feed means for feeding discrete fibers to said surface,

fiber duct means for conveying said fibers from said fiber feed means to said yarn formation surface,

surface moving means for moving said yarn formation surface in such a manner as to twist said discrete fibers conveyed thereto and deposited thereon to form a yarn thereby,

yarn withdrawal means for withdrawing said formed yarn from said surface in a direction transverse to the direction of movement of said surface, and

fiber entraining means for providing an airstream within said duct means to entrain said discrete fibers and move the same through said duct means from said fiber feed means to said yarn formation surface, wherein said fiber entraining means provides a component airstream moving substantially parallel to the axis of said yarn being formed whereby fibers entrained in said airstream toward said surface are

turned to a direction more parallel to said yarn axis as said fibers approach said yarn formation surface.

4,315,399

PROCEDURE FOR CLEANING A ROTOR OF A SPINNING UNIT OF THE OPEN-END TYPE

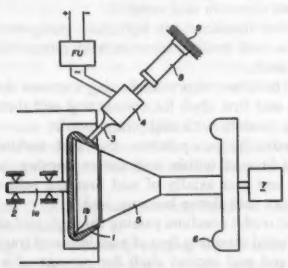
Hermann Pfeifer, Moillesulaz, and Erwin Zurcher, Le Lignon, both of Switzerland, assignors to Officine Savio S.p.A., Udine, Italy

Filed Apr. 1, 1980, Ser. No. 136,247

Claims priority, application Switzerland, Apr. 2, 1979, 3040/79

Int. Cl.³ D01H 11/00

U.S. Cl. 57—302 2 Claims



1. A process for cleaning a rotor of an open-end spinning unit, comprising imparting a vibration of an ultrasonic frequency corresponding to a harmonic of the natural frequency to at least one mode of vibration of a portion of a wall of said rotor delimiting a groove for the union of fibres, to impart to the surface of said groove an energy capable of detaching the particles of foreign matter lodged there, and discharging these particles from the rotor.

4,315,400

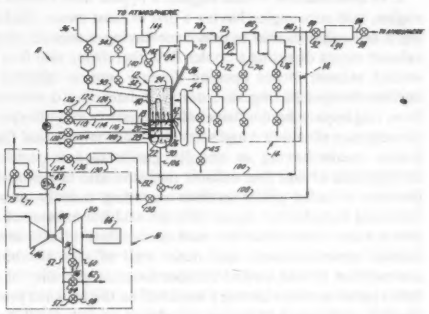
METHOD OF AND APPARATUS FOR PREHEATING PRESSURIZED FLUIDIZED BED COMBUSTOR AND CLEAN-UP SUBSYSTEM OF A GAS TURBINE POWER PLANT

Rossa W. Cole, E. Rutherford, and August H. Zoll, Cedar Grove, both of N.J., assignors to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed Feb. 8, 1980, Ser. No. 119,798

Int. Cl.³ F02C 3/26, 7/26

U.S. Cl. 60—39.02 8 Claims



1. In a gas turbine power plant having a pressurized fluidized bed combustor, a gas clean-up subsystem and a gas turbine-air compressor subsystem which are interconnected to provide for the generation of combustion gases in the combustor and flow of such gases through the gas clean-up subsystem and cleaned combustion gases from said gas clean-up subsystem to the gas turbine for driving the latter and said air compressor, the air compressor being connected to pass compressed air to the combustor, a preheating apparatus for heating the combustor and gas clean-up subsystem prior to start-up of the power plant comprising:

(a) combustion means separate from said combustor for providing combustion gases,

(b) first conduit means for connecting the combustion means with the gas turbine of said gas turbine-air compressor subsystem to conduct combustion gases to the gas turbine to drive the latter and thereby said air compressor,

(c) second conduit means for communicating the air compressor with the gas clean-up subsystem and said combustor to pass heated compressed air thereto,

(d) valve means disposed in said second conduit means and operative to a position to prevent flow of fluid from the gas clean-up subsystem to the gas turbine, and

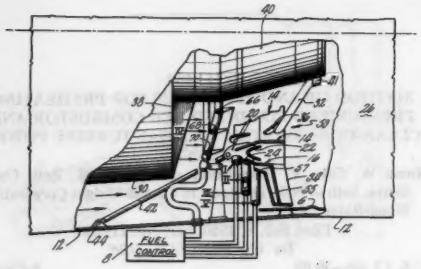
(e) vent means for the interior of said combustor and gas clean-up subsystem and selectively operative to communicate the interior of the combustor and gas clean-up subsystem with the atmosphere to effect flow of heated compressed air through the gas clean-up subsystem and combustor to thereby heat the gas clean-up subsystem and the combustor.

4,315,401

AFTERBURNER FLAMEHOLDER CONSTRUCTION

George W. Beal; James R. Grant, Jr., both of Palm Beach Gardens, and Kurt J. Hanloser, Lake Park, all of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 30, 1979, Ser. No. 99,054
Int. Cl.[3] F02K 3/10, 3/04
U.S. Cl. 60—261 5 Claims



1. In combination, a core engine, a bypass duct around said engine, said core engine having a first exhaust means discharging a hot exhaust, said bypass duct having a second annular exhaust means directing a cooler flow therefrom, said first and second exhaust means opening directly into an afterburner, said afterburner having an outer wall extending downstream from said bypass duct, a flameholder means in said afterburner downstream of said first and second exhaust means, said flameholder means having an annular gutter section positioned downstream of said first exhaust means in said hot exhaust, a plurality of radial gutter sections extending radially outward from said flameholder means through said hot exhaust of said first exhaust means and into said cooler flow of said second exhaust means towards said outer wall of said afterburner downstream of said second exhaust means, a plurality of said radial gutter sections having a manifold on the forward portion thereof, each manifold having an inlet opening located downstream of and in line with said first exhaust means, each manifold having outlet openings on each side of said radial gutter section and in a portion downstream of and in line with said second annular exhaust means, said manifold directing hot exhaust flow from its inlet opening to its outlet openings.

4,315,402

HEAT TRANSFER PROCESS AND SYSTEM

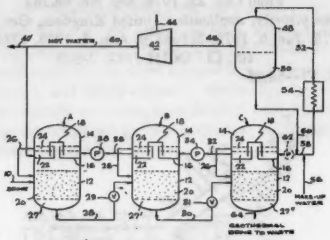
Pasupati Sadhukhan, Bartlesville, Okla., assignor to Occidental Research Corporation, Irvine, Calif.

Continuation-in-part of Ser. No. 861,907, Dec. 19, 1977, abandoned, and Ser. No. 907,143, May 17, 1978, Pat. No. 4,238,296. This application Jun. 18, 1979, Ser. No. 49,621
The portion of the term of this patent subsequent to Dec. 9, 1997, has been disclaimed.
Int. Cl.[3] F03G 7/00
U.S. Cl. 60—641.3 19 Claims

1. A heat transfer process which comprises in each stage of a plurality of interconnected like stages:

directly contacting a hot aqueous first liquid with a water immiscible second liquid having a boiling point lower than said first liquid in an evaporator zone, causing said immiscible second liquid to boil;

contacting the vapor of said immiscible second liquid generated during said boiling with a cooler aqueous third liquid in a condenser zone, causing condensation of said vapor and heating said third liquid by transfer of latent heat from the condensing vapor; and,



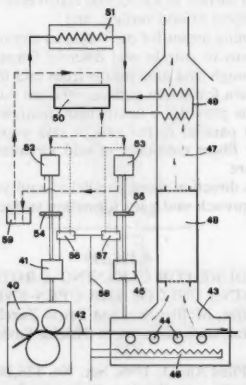
recycling said condensed immiscible second liquid from said condenser zone to said evaporator zone.

4,315,403

AERO-HYDRAULIC GENERATOR AND A HEAT RECOVERY INSTALLATION INCLUDING SUCH A GENERATOR

Edmond Girard, Boulogne, and Robert Rey, Fresnes, both of France, assignors to Messier, Paris, France

Filed Jan. 15, 1979, Ser. No. 3,383
Claims priority, application France, Feb. 2, 1978, 78 02846
Int. Cl.[3] F01K 27/00
U.S. Cl. 60—643 11 Claims



1. An aero-hydraulic generator operable as a turbo-pump or motor compressor for insertion in a conduit comprising:

a sleeve housing having a hollow interior and including end connecting flanges at each end of said sleeve, for insertion of said sleeve in said conduit;

a positive displacement hydraulic pump-motor rotatable within said hollow interior, said pump-motor having a first shaft;

an axial turbine-compressor having a second shaft connected with said first shaft for connecting said turbine-compressor in tandem with said pump-motor;

said hydraulic pump-motor and said turbine-compressor being housed within said sleeve housing, so that a first fluid can pass axially of said first and said second shafts through said sleeve housing; and,

inlet and outlet conduits passing through said sleeve housing in a radial direction free of packings and transverse to said first and said second shaft for passage of a second fluid through said pump-motor without leakage to the exterior of the generator.

4,315,404

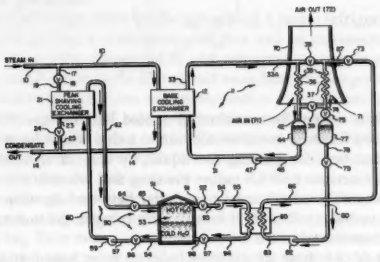
COOLING SYSTEM, FOR POWER GENERATING PLANT, USING SPLIT OR PARTITIONED HEAT EXCHANGER

Richard L. Schmitt, Batavia; Ban-Yen Lai, Willowbrook, and Matloob Husain, Wheaton, all of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Continuation-in-part of Ser. No. 42,364, May 29, 1979, Pat. No. 4,270,358. This application Nov. 15, 1979, Ser. No. 94,480

Int. Cl.³ F28B 5/00

U.S. Cl. 60—690 19 Claims



9. A method of cooling a hot fluid stream which comprises:

contacting a hot fluid stream in indirect heat exchange with a base cooling fluid so long as the base cooling fluid accepts heat rejected from the hot fluid stream and adequately cools the same,

cooling the hot base cooling fluid by passing it through parallel first and second sections of a cooling tower heat exchanger and then returning it to again accept heat rejected by the hot fluid stream,

supplementing the cooling of the hot fluid stream when the base cooling fluid provides inadequate cooling thereof, after being passed through both of said first and second sections of the cooling tower heat exchanger, by contemporaneously also indirectly contacting the hot fluid stream with a secondary cooling liquid which is cold thereby heating the secondary cooling liquid,

delivering the hot secondary cooling liquid to a hot reservoir for storage,

isolating the flow and subsequent recirculation of base cooling fluid through the cooling tower heat exchanger first section from flow and subsequent recirculation of base cooling fluid through the cooling tower heat exchanger second section, when the hot fluid stream is sufficiently cooled by base cooling fluid itself cooled by passage through only the first section,

using the stream of base cooling fluid cooled by passing it through the second section of the cooling tower to cool hot secondary cooling liquid removed from the hot reservoir,

delivering the cold secondary cooling liquid to a cold reservoir for storage, and

withdrawing cold secondary cooling liquid from the cold reservoir and again delivering it into indirect heat exchange with the hot fluid stream when the base cooling fluid provides inadequate cooling.

4,315,405

COMBUSTION APPARATUS

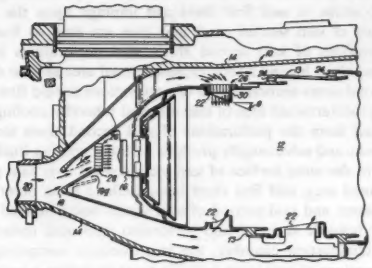
Anthony Pidcock; Desmond Close, and William C. T. Kwan, all of Derby, England, assignors to Rolls-Royce Limited, London, England

Filed Nov. 28, 1979, Ser. No. 98,173

Claims priority, application United Kingdom, Dec. 9, 1978, 47868/78

Int. Cl.³ F23R 3/46

U.S. Cl. 60—752 4 Claims



1. A combustion apparatus for a gas turbine engine comprising:

an outer casing;

a combustion chamber within said outer casing and defined by an inner casing spaced from said outer casing;

said combustion chamber having at least one primary air inlet and a plurality of dilution air inlets; and

at least one of said dilution air inlets having an airflow directing means arranged to receive an airflow from a source of compressed air and to direct said airflow in a predetermined direction to a location within the combustion chamber, said airflow directing means comprising an array of parallel arranged adjacent ducts having axes normal to an axis of the combustion chamber, each of said ducts having an inlet and an outlet, the direction of airflow to be directed being oblique to a common plane containing the inlets to said ducts of said airflow directing means, said outlets for said ducts lying in a common plane closely adjacent to the casing of said combustion chamber, and each of said ducts having a length to width ratio in a range of 2 to 3.

4,315,406

PERFORATE LAMINATED MATERIAL AND COMBUSTION CHAMBERS MADE THEREFROM

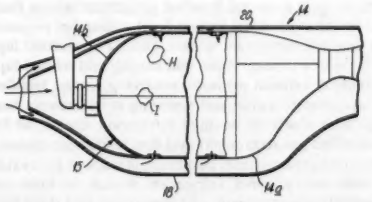
Jagnandan K. Bhangu, Ockbrook; Peter Fry, Allestree, and David Hustler, Nelson, all of England, assignors to Rolls-Royce Limited, London, England

Filed Apr. 7, 1980, Ser. No. 137,776

Claims priority, application United Kingdom, May 1, 1979, 15152/79

Int. Cl.³ F23R 3/44

U.S. Cl. 60—754 4 Claims



1. In a gas turbine engine combustion chamber of the type

including a wall, at least part of the said wall being formed from a perforate laminated material, said material comprising first and second sheets having abutting surfaces, each of said sheets being provided with a plurality of perforations, at least one of the abutting surfaces of said sheets being provided with channels defining passageways in said perforate laminated material interconnecting said perforations of said first sheet with said perforations in said second sheet, said perforations in said first sheet being operable to meter the flow of a cooling fluid successively through said first and said second sheets, whereby discrete flows of said cooling fluid pass through said perforations in said first sheet and impinge upon the inside surface of said second sheet and then are emitted from the perforations of said second sheet, said perforations in said second sheet having a total cross-sectional area at least double the total cross-sectional area of perforations in said first sheet in a predetermined area of said material whereby cooling fluid emitted from the perforations of said second sheet tends to coalesce and substantially produce a film of cooling fluid adjacent to the outer surface of said second sheet over said predetermined area, said first sheet being defined as an outer cold-side sheet and said second of said sheets being defined as an inner hot-side sheet of said perforated laminated material of said combustion chamber, the improvement comprising the perforations of said inner hot-side sheet including a pattern in which adjacent perforations in said predetermined area of said perforate laminated material are out of alignment with each other axially along an axis parallel to the longitudinal axis of the combustion chamber and circumferentially out of alignment with each other in a plane transverse to the longitudinal axis of the combustion chamber whereby hot streaks of combustion products are prevented from developing along the outer surface of the inner hot-side sheet.

4,315,407

GAS STORAGE AND TRANSMISSION SYSTEMS

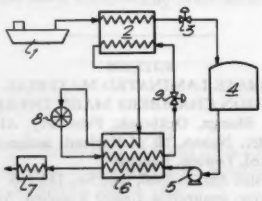
Malcolm R. Creed, Brentwood, and Ronald B. Gilmour, Woodford Green, both of England, assignors to British Gas Corporation, London, England

Filed Jun. 11, 1980, Ser. No. 158,488

Claims priority, application United Kingdom, Jun. 26, 1979, 22252/79

Int. Cl.³ F17C *7/02*

U.S. Cl. 62—53 **4 Claims**



1. A method for storing and transmitting liquifiable gases, which method comprises cooling a pressurized first liquified gas stream by indirect heat exchange with a first refrigerant stream, to form a second liquified gas stream whose temperature is less than its initial boiling point at ambient pressure and a first warmed refrigerant stream, passing the second liquified gas stream to a storage vessel and storing said second liquified gas stream at ambient pressure, removing second liquified gas from said storage vessel and warming it by indirect heat exchange with a second warmed refrigerant stream, to form a third liquified gas stream and said first refrigerant stream, said warmed refrigerant stream also being in indirect heat exchange with said first warmed refrigerant stream to form second warmed refrigerant stream; and vaporizing said third liquified gas stream.

4,315,408

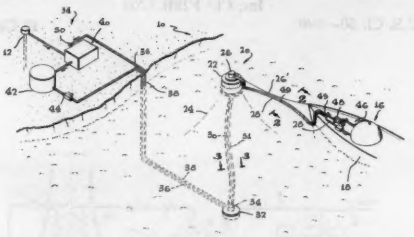
OFFSHORE LIQUIFIED GAS TRANSFER SYSTEM

Robert D. Karl, Pacific Palisades, Calif., assignor to Amtel, Inc., Providence, R.I.

Filed Dec. 18, 1980, Ser. No. 217,850

Int. Cl.³ F17C *7/02*

U.S. Cl. 62—55 **11 Claims**



1. In a system for transferring cooled liquified gas from a liquifier of a shore based installation to a ship which has a heat insulated tank for holding the liquid, by way of an offshore transfer structure which moors the ship, and wherein the conduit assembly which carries material between the ship and shore includes a flexible hose structure lying in the water, the improvement wherein:

said flexible hose structure includes an inner hose forming a central passageway and having an inner hose periphery, and an outer hose surrounding said inner hose and having internal walls of much larger diameter than said inner hose periphery to leave an annular passageway between them; and including

means coupling said central passageway to said liquifier, to carry cooled liquid gas towards said vessel; and

means coupled to said annular passageway to carry away vapor lying therein.

4,315,409

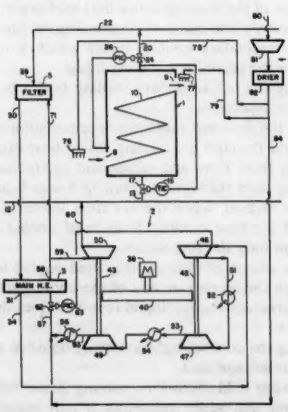
CRYOGENIC FREEZING SYSTEM

Alan L. Prentice, Surbiton, England, and Richard E. Filippi, Allentown, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 22, 1980, Ser. No. 219,020

Int. Cl.³ F25D *13/06*

U.S. Cl. 62—63 **8 Claims**



1. In an apparatus for freezing articles comprising in combi-

nation a freezer having an inlet for admitting the articles to be frozen, an outlet for permitting the frozen articles to leave said freezer and a conveyor for transporting the articles through said freezer from said inlet to said outlet thereof; a refrigerant supply main connected to said freezer for introducing refrigerant air to said freezer; a return main connected to said freezer for receiving the warmed air from said freezer; refrigeration means connected to said refrigerant supply main for supplying said supply main with air at cryogenic temperatures; and a main heat exchanger having a high pressure side connected to said refrigeration means and a low pressure side connected between said refrigeration means and said return main for exchanging the refrigerant value of said warmed air from said return main in said low pressure side with the air from said refrigeration means in said high pressure side; the improvement which comprises:

(a) said refrigeration means comprising a single refrigeration unit having a compression section and an expansion turbine section connected to said refrigeration supply main;

(b) said high pressure side of said main heat exchanger being connected between said compression and expansion turbine sections of said refrigeration means and said low pressure side being connected between said compression section of said refrigeration means and said return main, whereby the refrigeration value of said warmed air is exchanged with the air from said compression section of said refrigeration means in said high pressure side; and

(c) bag filter means connected between said return main and said main exchanger for removing ice particles from the warmed air in said return main prior to exchanging its refrigeration value in said main heat exchanger, which filter means comprises at least one bag which is periodically pulsed to remove ice collected therein.

4,315,410

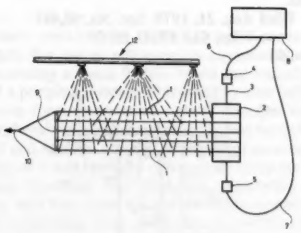
METHOD AND APPARATUS FOR MAKING ICE BLOCKS

Ivar Brandin, Norrkoping, Sweden, assignor to Stal Refrigeration AB, Norrkoping, Sweden

Filed May 12, 1980, Ser. No. 149,131

Int. Cl.³ F25C *1/00*

U.S. Cl. 62—66 **6 Claims**



1. In the production of ice blocks for use as a supporting structure against a wall, the method which comprises placing a plurality of pipes in the immediate vicinity of said wall, applying water to said pipes externally thereof while passing through the pipes a cooling medium having a temperature below the melting point of ice, thereby freezing a layer of ice on said wall, then passing through said pipes a cooling medium having a temperature above the melting point of the ice, thereby loosening the pipes from the ice, and removing at least some of the pipes from said ice layer.

4,315,411

ALCOHOL TRAP

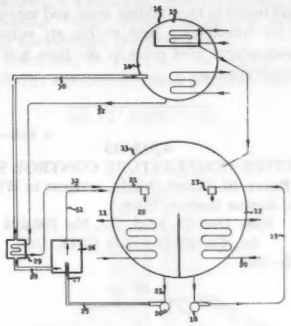
Isaih Vardi, Rehovot; Yigal Kimchi, Ramat Gan, and Jonathan Ben-Dror, Hadar Am, all of Israel, assignors to Tadiran Israel Electronics Industries Ltd., Tel Aviv, Israel

Filed May 15, 1980, Ser. No. 150,135

Claims priority, application Israel, May 16, 1979, 57311

Int. Cl.³ F25B *15/00*

U.S. Cl. 62—112 **3 Claims**



1. A process for operating the refrigeration cycle of a chiller of the type using water as a refrigerant and lithium bromide or the like as an absorbant and 2ethyl n-hexanol as an additive, comprising the steps of:

removing an aqueous lithium bromide solution containing 2-ethyl n-hexanol from an absorber;

continuously separating the solution into a hexanol depleted phase and a hexanol enriched phase;

recycling the enriched phase to the absorber; and

feeding the alcohol depleted phase through a heat exchange means to a generator, said depleted phase being in heat exchanger relationship with lithium bromide fed from the generator to said absorber through said heat exchange means.

4,315,412

AIR CONDITIONING APPARATUS UTILIZING SOLAR ENERGY AND METHOD

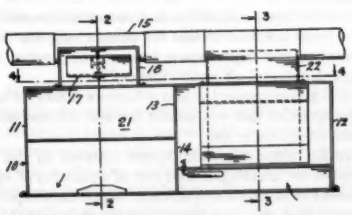
Gershon Meckler, 7425 Democracy Blvd., Unit 212, Bethesda, Md. 20034

Continuation of Ser. No. 897,271, Apr. 17, 1978, abandoned, which is a continuation of Ser. No. 735,548, Apr. 18, 1978, Pat. No. 4,084,389, which is a continuation of Ser. No. 572,792, Apr. 29, 1975, abandoned. This application May 19, 1980, Ser. No. 150,953

The portion of the term of this patent subsequent to Apr. 18, 1995, has been disclaimed.

Int. Cl.³ F25D *17/00, 17/06*

U.S. Cl. 62—179 **24 Claims**



1. Apparatus for delivering air for air conditioning a zone of a building, said apparatus comprising, in combination, a mixing

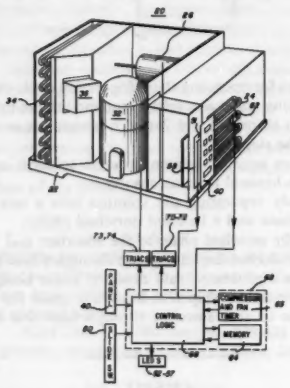
chamber having a first and a second air inlet, means for delivering primary, conditioned air through said first inlet to said chamber, means effective to vary the rate at which primary conditioned air is delivered to said chamber between a maximum and a predetermined lesser rate, an outlet operatively connected to deliver air from said chamber to the zone of the building, induction means operative to induce a flow of air into said chamber through the said second inlet thereof for mixture therein with primary conditioned air and delivery therewith through said outlet to the building zone, and means within said apparatus for transferring heat to the air induced to flow through said second inlet prior to the time it is mixed with primary conditioned air.

4,315,413

SELECTIVE TEMPERATURE CONTROL SYSTEM

Daniel A. Baker, St. Joseph, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 31, 1979, Ser. No. 108,694
Int. Cl.³ F25D *17/00*; G01K *7/00*
U.S. Cl. 62—180 **42 Claims**



1. A temperature control system for a space cooling device having an evaporator, a variable speed evaporator fan and a compressor, comprising:

an ambient thermistor having a resistance variable in accordance with the temperature of a space;

conversion means coupled to said ambient thermistor for converting said thermistor resistance into a digital number proportional to said space temperature;

a memory for storing a plurality of digital numbers representing set point temperatures;

set point selection means coupled to said memory for retrieving from said memory one of said digital set point numbers;

difference means coupled to said conversion means and said set point selection means for determining the difference between said digital space temperature number and said selected digital set point number;

control means coupled to said difference means for adjusting the speed of said evaporator fan and the energization of said compressor; and

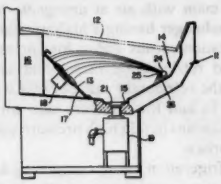
operation mode selection means coupled to the control means for selecting at least one of a plurality of operation modes including a first mode in which the evaporator fan speed and the compressor energization are controlled according to the magnitude of said difference and a second mode in which only the compressor energization is controlled according to the magnitude of said difference.

4,315,414

AUTOMATIC CLEANING OF REFRIGERATED CASE INTERIOR SURFACES

Fayez F. Ibrahim, Niles, Mich., assignor to Tyler Refrigeration Corporation, Niles, Mich.

Filed May 5, 1980, Ser. No. 146,430
Int. Cl.³ F25B *19/00*; F28G *9/00*
U.S. Cl. 62—231 **7 Claims**



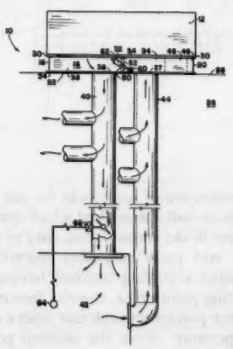
2. A refrigerated display case comprising a refrigerant circulation system, a space wherein air cooled by the refrigerant system is circulated, a heat exchange shelf or platform overlying said space on which articles for display are placed, a spray system for cleansing the interior walls of said space and including a passage containing a valve connecting said spray system with a source of cleaning liquid, and a drainage system for said space opening into the lower portion of said space characterized control means operably connected to said refrigerant system, said spray system and said drainage system, and means for automatically actuating said control means between a normal condition wherein a refrigerant system is active and said spray system and drainage system are inactive, and a space cleaning condition wherein said refrigerant system is inactive, said spray system is activated to discharge cleansing liquid on the space walls and said drainage system is activated for removal of said liquid from the space, said refrigerant system containing a compressor driven by an electrical motor, said drainage system containing an electrical motor for driving a disposal unit and valve having an operating solenoid, characterized by said control means comprising switching means in the circuit of said motors and said solenoid and time controlled means for actuating said switching means.

4,315,415

PLENUM TYPE VARIABLE AIR VOLUME MOUNTING CURB

Roy J. Wilson, Tulsa, Okla., assignor to John Zink Company, Tulsa, Okla.

Filed Aug. 21, 1979, Ser. No. 68,487
Int. Cl.³ F25D *23/00*
U.S. Cl. 62—263 **2 Claims**



2. In an air conditioning unit mounting curb with provisiong

for ducts for passage of air to and from an air conditioning unit from and to a plurality of rooms immediately subadjacent, comprised of a rectangular outer perimeter, a closed bottom, a wall dividing said curb into two plenums, at least one opening in one of said plenums for supply of air to said rooms, and at least one opening in a second of said plenums for return air from said rooms, the improvement comprising a normally closed bypass means between said plenums, said bypass means comprising an opening in said dividing wall, a damper blade covering said opening and hingeably connected to the return air side of said dividing wall, means to yieldably maintain said damper blade normally closed until a given pressure differential is established, comprising a hinge connecting the top edge of said damper blade to said return air side of said dividing wall, a first lever being pivotally connected at one end adjacent the lower portion of said damper blade, a second lever pivotally connected at one end to an opposite end of said first lever and an opposite end of said second lever pivotally connected between a plurality of parallel lugs, connected to said bottom of said return air plenum by a first end of an axle rod passing therethrough, an opposite end of said axle rod extending outwardly parallel to said dividing wall through said outer perimeter, and an adjustable counter-weight attached to said opposite end of said axle rod, means to open said bypass means, responsive to said given pressure differential acting thereupon, and thus provide a variable air volume system to said rooms.

4,315,416

BATH CONTAINER FOR A REFRIGERATION EQUIPMENT

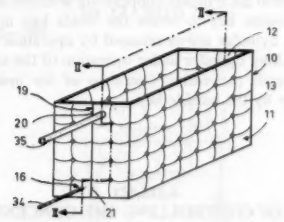
Walter Frey, Holgenburg 17, and Rolf Kaiser, Dulkweg 21, both of 73 Esslingen, Fed. Rep. of Germany

Filed Sep. 18, 1980, Ser. No. 188,279

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1979, 2939076

Int. Cl.³ F25D *11/04*

U.S. Cl. 62—438 **11 Claims**



1. A bath container for cooling a liquid contained therein, particularly for use in refrigeration equipment, comprising a jacket bounding a space for the liquid and including a bottom wall and a peripheral side wall formed by two individual walls arranged to form an enclosed hollow chamber therebetween, said peripheral side wall being rigidly connected to said bottom wall and having an upper opening for receiving the liquid and being of a substantially rectangular cross-section to form four space boundary wall elements constituting said hollow chamber, said two individual walls being connected to each other by connecting spots uniformly spaced from each other to divide said hollow chamber into a plurality of chambers communicated with one another; one of said space boundary wall elements forming two end surfaces of said side wall; a capillary tube for injecting a refrigerant into said hollow chamber and located near one of said end surfaces; a refrigerant discharging member for withdrawing the refrigerant from said hollow and located chamber near another one of said end surfaces, said feeding member and said discharging member being spaced from one another at the most possible distance along the height of said jacket so that the refrigerant enters said capillary tube, passes through said hollow chamber and leaves the same through said refrigerant discharging member whereby said jacket functions as an evaporator; and a surface heating element mounted on said bottom wall and including a heating wire of a substantially small cross-section and being isolated from said bottom wall by an insulating mat rigidly connected to said bottom wall, said heating wire being embedded into said mat.

4,315,417

BOREHOLE LOGGING TOOL CRYOSTAT

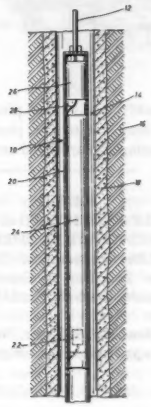
Alain Zarudiansky, Velizy, France, assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Jun. 19, 1980, Ser. No. 161,069

Claims priority, application United Kingdom, Jun. 21, 1979, 21750/79

Int. Cl.³ F25B *19/00*

U.S. Cl. 62—514 R **8 Claims**



1. A cryostat for a high-sensitivity photon detector and adapted for use in a borehole logging tool, comprising:

an evacuable housing of generally tubular form;

an elongate single-phase heat sink of solid, thermally conductive material disposed within said housing for thermal contact with a photon detector to be maintained at cryogenic temperatures; and

means for establishing thermal contact between said heat sink and a cooling means separate from said cryostat, prior to use of the cryostat, whereby said detector is maintained at cryogenic temperatures by absorption and retention of heat within said heat sink.

4,315,418

OVERLOAD COUPLINGS

Ary van der Lely, 10A, Weverskade, Maasland, and Cornelis J. G. Bom, 36, Esdoornlaan, Rozenburg, both of Netherlands

Division of Ser. No. 872,545, Jan. 26, 1978, Pat. No. 4,199,963. This application Sep. 11, 1979, Ser. No. 74,545

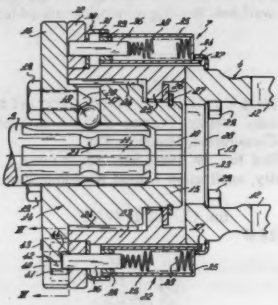
Claims priority, application Netherlands, Feb. 1, 1977, 7701012

Int. Cl.³ F16D *3/56*

U.S. Cl. 64—28 R **9 Claims**

1. A replaceable holder containing frangible pins any one of which is adapted to hold two members of an overload coupling against relative rotation until overload, said holder comprising a housing and a plurality of elongated pins mounted side-by-side within said housing, said holder being adapted for quick release connection to the outer surface of one of the members that has spaced apart retaining rims on the outer surface thereof, lug means for detachably retaining said holder between said rims so that the forward end of said housing is

normally positioned adjacent aligned recesses in said two members, said forward end of the housing comprising guide means for said pins and said guide means having corresponding



openings that slideably receive said pins, spring means in said housing urging at least one of said pins through a respective opening of the housing towards said recesses.

4,315,419

CONTOURED PILE FABRIC AND A PROCESS FOR THE PREPARATION THEREOF

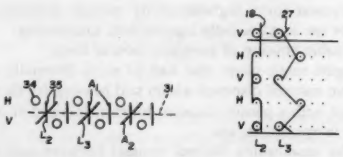
Bert Kernbichler, Obertshausen, and Christian Wilkens, Heusenstamm, both of Fed. Rep. of Germany, assignors to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Fed. Rep. of Germany

Filed Jan. 21, 1980, Ser. No. 113,582

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1979, 2904203

Int. Cl.³ D04B *23/02*

U.S. Cl. 66—87 **13 Claims**



1. A process for fabricating knitted fabric having patterns formed thereon by pile threads of different lengths on a double needle bed warp knitting machine including two needle beds and a plurality of guidebars associated therewith comprising the steps of:

(a) knitting the pile forming threads carried by a first guidebar about the needles forming the ground fabric on a first needle bed;

(b) knitting said first guidebar pile forming threads about the needles of a second needle bed and returning to step (a);

(c) knitting the pile forming threads carried by a second guidebar about the needles forming the ground fabric on said first needle bed;

(d) knitting said second guidebar pile forming threads about the needles of a second needle bed and returning to step (c); said first guidebar and said second guidebar being provided with different displacements when moving between said first and second needle beds; and

(e) centrally cutting said pile forming threads appearing between the fabric formed by said first and second needle bars along the entire width of said fabric to form two separate panels.

4,315,420

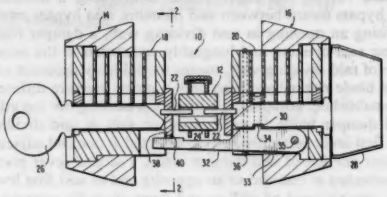
RETAINED KEY DOUBLE CYLINDER DEADBOLT

Ronald N. Oliver, 559 Howard Dr., Salem, Va. 24153

Filed Apr. 11, 1980, Ser. No. 139,523

Int. Cl.³ E05B *9/10, 17/04*

U.S. Cl. 70—379 R **6 Claims**



1. A retained key double cylinder lock deadbolt including:

a. a locking deadbolt assembly with a deadbolt slidable from a retracted position to a locking position;

b. a pair of cylinder lock assemblies, one being an outside cylinder lock and the other being an inside cylinder lock;

c. a locking cylinder in each cylinder assembly;

d. deadbolt actuating means operated by either locking cylinder when the locking cylinder is operated with a proper key for moving the deadbolt from retracted position within the housing to locking position;

e. a pair of proper keys, one for each of the inside locking cyclinder and one for the outside locking cylinder;

with means for retaining the inside key by the improvements comprising:

f. notch means in the inside key only;

g. mechanical latch means adjacent the locking deadbolt assembly and cooperating with the cylinder lock assemblies to be operable by the outside locking cylinder, the mechanical latch means cooperating with the notch means in the inside key to retain the inside key in the inside locking cylinder unless released by operation of the outside locking cylinder under operation of the outside key;

h. and means preventing operation of the inside locking cylinder by the outside key.

4,315,421

METHOD OF CONTROLLING THE CONCENTRATION AND STABILITY OF AN EMULSION

Walter A. Wilson, Pittsburgh, Pa., assignor to National Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 948,626, Oct. 3, 1978, Pat. No. 4,202,193. This application Dec. 4, 1979, Ser. No. 100,206

Int. Cl.³ B21B *27/10, 45/02;* G05D *11/06*

U.S. Cl. 72—42 **23 Claims**

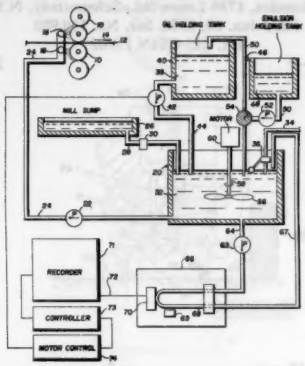
1. A method of controlling the stability of an oil-in-water emulsion suitable for use as a lubricant in a metalworking operation comprising the steps of,

circulating a portion of the emulsion through a liquid density measuring cell and operating the cell to generate a first electric signal proportional to the density of the emulsion flowing through the cell,

periodically interrupting the flow of the emulsion through the cell and maintaining a quantity of the emulsion in the cell in a quiescent state for a predetermined time sufficient to permit the oil and water phases of the emulsion to at least partially separate,

operating the cell to determine the density of the emulsion in the cell at the termination of the predetermined time and to generate a second electric signal proportional to the determined density of the at least partially separated emulsion, and

comparing the first and second electric signals to determine the change of density of the liquid in the cell during the



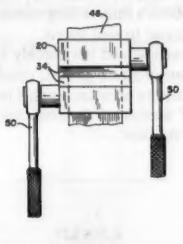
predetermined time and utilizing the determined change of density as an indication of emulsion stability.

4,315,422

BENDER EMPLOYING SOCKET WRENCH MEANS

Thomas D. McBride, Washington Township, Bergen County, N.J., assignor to Joan McBride, Westwood, N.J.

Filed Jun. 10, 1980, Ser. No. 158,322
Int. Cl.³ B21D *7/00*
U.S. Cl. 72—388 **4 Claims**



1. Apparatus for bending metal strip, said apparatus actuated by two socket wrench handles and including:

(a) two jaw members of substantially like U-shaped configurations, each jaw member having upper and lower jaw portions secured to an end member, the inner faces of the upper and lower jaw portions being substantially parallel, said end member having means for receiving, retaining and being driven by a socket wrench handle;

(b) a bevel edge of at least forty-five degrees formed along one longitudinal edge of the upper jaw and with this bevel substantially approaching the inner face of the jaw;

(c) a shim adapted to be inserted in the space in the jaw and adjacent the strip being bent, said shim adapted to urge and maintain an inserted strip adjacent the upper jaw, and

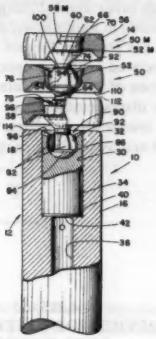
(d) means for urging the inserted strip of metal toward and to each of the upper jaws and retaining said strip during bending as the strip is moved around a theoretical bending point at the contiguous facing beveled edges of the upper jaws with the beveled edges adjacent the strip being bent.

4,315,423

TUBE BENDING MANDREL

Samuel B. McGuire, Arvada, Colo., assignor to Bending Products, Inc., Englewood, Colo.

Filed May 30, 1980, Ser. No. 154,923
Int. Cl.³ B21D *9/03*
U.S. Cl. 72—466 **10 Claims**



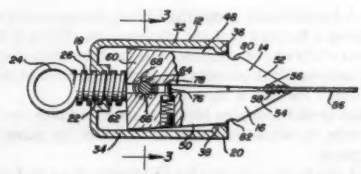
1. The improved ball and socket assemblies connectable in end to end relation with rings therearound to define the bendable portion of a pipe bending mandrel which comprise: at least two elongate rigid links contoured to provide a spherically-shaped head of less than 180° in angular extent at one end, a body at the end opposite said head having an outer surface shaped to receive and detachably mount a ring, and a neck of reduced size interconnecting said head and body, the body of at least one of said links having a spherical socket therein of the same curvature as said head but of greater than 180° in angular extent and having a mouth opening in a direction opposite the latter; and, at least two arcuate spherically-surfaced ring segments adapted to encircle the neck adjacent the head of another of said link members, said segments cooperating with one another and said adjacent head to define a ball sized mate with the socket in said one socket-carrying link to form a universal coupling therewith.

4,315,424

VEHICLE BODY CLAMP

Davis R. Jarman, 612 Ward Dr., and Virgil H. Hinson, 206 Fairway Oak, both of Brunswick, Ga. 31520

Filed Jan. 16, 1980, Ser. No. 114,103
Int. Cl.³ B21J *13/02*
U.S. Cl. 72—479 **12 Claims**



1. An auto body gripping clamp including a base component defining a pair of spaced opposing abutment surfaces, a pair of elongated side-by-side levers including first and second pairs of corresponding end portions projecting in opposite directions from opposite sides of a plane transverse to said levers and containing said abutment surfaces, said levers being supported from said base component for longitudinal shifting relative thereto, said first pair of end portions projecting from one side of said plane defining opposing jaw surfaces for clamping an auto body portion therebetween, means carried by said base

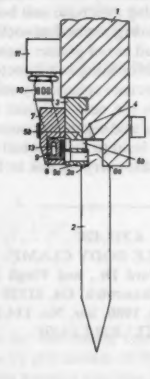
component for attaching a pull member thereto for applying a pulling force thereon in a direction opposite to the direction in which said first pair of end portions project, said levers including pairs of remote and adjacent longitudinal surfaces, said remote surfaces being slightly divergent toward said second end portions, said remote surfaces being slidably engageable with said abutment surfaces to cam said first pair of end portions toward each other upon shifting of said levers relative to said base component in longitudinal directions of said levers in which said first end portions thereof project, and pivot means operatively associated with the opposing sides of the second pair of end portions of said levers interconnecting the latter for relative angular displacement about an axis extending transversely of said levers for swinging of said first pair of end portions toward and away from each other.

4,315,425

CLAMPING DEVICE FOR FASTENING A TOOL TO A TOOL HOLDER

Vaclav Zbornik, Oftringen, and Walter Gygli, Niederbipp, both of Switzerland, assignors to Haemmerle AG, Zofingen, Switzerland

Filed Jul. 29, 1980, Ser. No. 173,674
Claims priority, application Austria, Aug. 1, 1979, 5286/79
Int. Cl.³ B21D *37/04*
U.S. Cl. 72—481 **5 Claims**



1. A hydraulically pressurized block clamping assembly for receiving a bending tool and clamping the tool in a receiving groove of the ram of a folding press, said assembly comprising:

a clamping block cooperating with the groove of the ram in which the tool is received;

holes in said clamping block for receiving pins, one in each hole, to secure said ram to said tool by means of said block;

said pins being arranged longitudinally along said groove in said ram;

a bearing block fastened by pins to said clamping block;

said bearing block having a receiving groove in the region of said longitudinally arranged pins of said clamping block;

an elastic hose in said receiving groove of said bearing block adapted to be pressurized and bear against the tool to clamp it in the groove of said bearing block; and

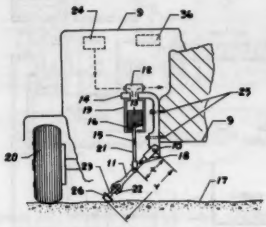
a pressure valve means for pressurizing said elastic hose and for venting the pressure whereby said tool may be released upon venting and is clamped upon pressurizing.

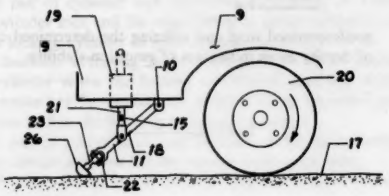
4,315,426

FRICTION COEFFICIENT MEASUREMENT FROM A MOVING VEHICLE

Ronald E. Brandon, 1734 Lenox Rd., Schenectady, N.Y. 14611

Filed Jan. 10, 1980, Ser. No. 110,985
Int. Cl.³ G01N *19/02*
U.S. Cl. 73—9 **3 Claims**





1. A method of measuring and indicating sliding coefficient of friction values for vehicles operating on roadways comprising the steps of:

Lowering an instrumented probe with a non rotatable tip from a vehicle moving with a predetermined speed to momentarily contact the roadway with the non-rotatable tip of said probe in a fully sliding manner with a rate of slip substantially equal to said speed,

measuring the vertical and horizontaly loads acting on said probe by means of strain gauges, combining said loads in an electronic unit to produce a signal indicating the sliding coefficient of friction, and producing a display of said coefficient of friction.

4,315,427

APPARATUS, METHOD AND SYSTEM FOR DETERMINING THE INTEGRITY OF SEALED CONTAINERS

L. David Leiter, Willow Grove, and Jacob Ravn, Phoenixville, both of Pa., assignors to The West Company, Phoenixville, Pa.

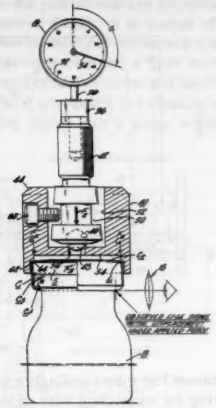
Filed May 12, 1980, Ser. No. 148,694
Int. Cl.³ G01M *3/02*
U.S. Cl. 73—52 **6 Claims**

1. A method for testing the integrity of the seal of a container sealed by means of a closure comprising a resilient sealing element and a mechanical element compressing said resilient sealing element and locking the same in sealed relationship to said container which comprises:

applying an external force to said mechanical element in a direction to further compress said resilient sealing element,

sensing displacement of said mechanical element relative to said container when said externally applied force is substantially equal to the initial residual static force in said

compressed resilient sealing element, and comparing the said residual static force so determined to a predetermined



standard known to indicate sufficient compression of said resilient sealing element to provide an acceptable seal.

4,315,428

SENSOR FOR DETECTING PARTICLES IN A FLUID FLOW

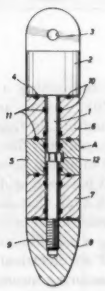
Paulus A. Stuivenwold, and Kornelis Van Timmeren, both of Rijswijk, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 5, 1980, Ser. No. 156,835

Claims priority, application United Kingdom, Jun. 26, 1979, 22278/79

Int. Cl.³ E21B *47/10*; G01N *15/00*

U.S. Cl. 73—61 R **6 Claims**



1. A sensor for detecting particles in a fluid flow, including:

at least one metal ring-shaped member supporting transducer means in acoustic wave contact therewith;

a rod provided with a shoulder;

clamping means for clamping the ring-shaped member on the rod by exerting an axial force on the rod and the member; and

material having elastic properties arranged between the ring-shaped member and the rod, and between the ring-shaped member and the surfaces by which the clamping force is exerted on the ring-shaped member.

4,315,429

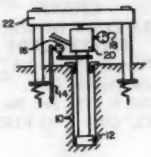
METHOD OF DETERMINING DEFORMATION CHARACTERISTICS OF CONSTRUCTION MATERIALS AND SOIL

Viktor N. Morozov, prospekt Kosmonavtov, 31, kv. 29, Ukhta; Ilya A. Gimpelson, ulitsa Yaroslava Gasheka, 4, korpus 1, kv. 532, and Vladislav M. Bogomolov, prospekt Energetikov, 72, korpus 1, kv. 38, both of Leningrad, all of U.S.S.R.

Filed Feb. 19, 1980, Ser. No. 122,620

Int. Cl.³ G01N *33/24*

U.S. Cl. 73—84 **7 Claims**



1. A method of determining the deformation characteristics of construction materials and soil with the use of a die, including the following successively performed steps:

placing said die of a predetermined diameter on the material being tested;

applying an increasing load to said die, to cause the displacement thereof owing to the deformation of said tested material by a value equalling 0.03 to 10.0 diameters of said die;

measuring said displacement of said die;

using the data obtained by said measurement to calculate the modulus of deformation of said material;

gradually relieving the load applied to said die;

measuring the displacement of said die due to the elasticity.

4,315,430

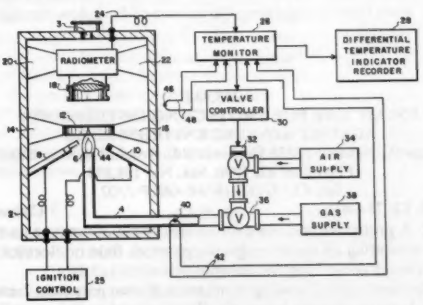
GAS CALORIFIC CONTENT ANALYZING APPARATUS

Eugene L. Szonntagh, Flourtown, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 21, 1980, Ser. No. 123,411

Int. Cl.³ G01N *25/30*

U.S. Cl. 73—190 CV **12 Claims**



1. A gas calorific analyzer comprising

gas-air ratio control means for controlling a gas-air mixture,

combustion means for producing combustion of said gas-air mixture.

means for producing an output signal representative of the temperature increase produced by the combustion of the gas-air mixture,

peak detecting means responsive to said output signal to

control said control means to change the gas-air ratio until a peak is detected in said output signal and

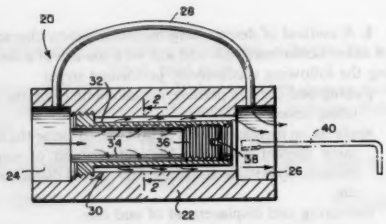
indicating means for producing an indication of said output signal as a measure of the calorific content of the gas to be analyzed wherein said means for producing an output signal includes a "black body" heated by the combustion of said gas-air mixture and a temperature detecting means for monitoring the temperature difference between said "black body", said gas-air mixture and an ambient temperature of the environment of said gas analyzer.

4,315,431

ADJUSTABLE FLOW DIVIDER FOR MASS FLOWMETERS

Charles E. Hawk, Newport News, Va., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Oct. 9, 1980, Ser. No. 195,512
Int. Cl.³ G01F *5/00*; F15D *1/14*
U.S. Cl. 73—203 **12 Claims**



1. An adjustable flow divider for a flowmeter comprising:

a porous tube having an inlet end for receiving a portion of a fluid flow to be measured, said tube having a plurality of longitudinally extending projections on an inner surface thereof;

a generally cylindrically shaped plug, inserted within said tube and having a threaded outer surface, the thread diameter of said plug being larger than the inside diameter of said tube, said plug tapping said projections as the plug moves within said tube to form a seal against fluid flow between said tube and the plug; and

means for adjusting the position of said plug relative to said tube to vary the total porous surface area exposed to said fluid thereby regulating the amount of fluid flow through the tubes.

4,315,432

ENCLOSURE FOR PROTECTING INSTRUMENTS AGAINST ADVERSE ENVIRONMENTS

Roger A. Newton, 17835 Gebhardt Rd., Brookfield, Wis. 53005

Filed Jun. 12, 1980, Ser. No. 158,894
Int. Cl.³ G01L *19/14*; G01P *1/02*
U.S. Cl. 73—431 **7 Claims**

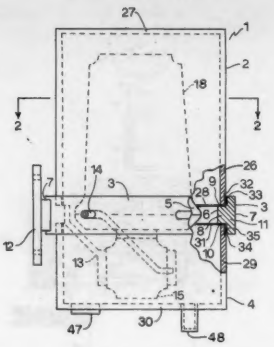
1. A protective enclosure for an instrument of the type used for measuring an electromagnetic, physical, fluid or electrical parameter comprising the combination of:

first and second housing elements and a support ring, each housing element being detachably joined to the support ring to define a protective enclosure;

the support ring having an inner wall sealingly mounted between each of said first and second housing elements and opening onto the interior of the protective enclosure and an outer wall positioned exteriorly thereof;

mounting means attached to a portion of the inner wall of the support ring for supporting an instrument inside the enclosure;

means attached to the outer wall of the support ring for supporting the enclosure on a rigid surface; and



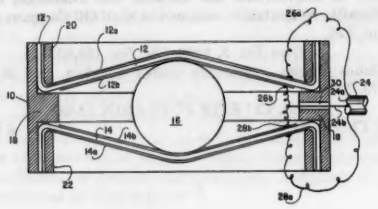
plural instrument line means sealingly extending through the support ring for connection with an instrument inside the enclosure.

4,315,433

POLYMER FILM ACCELEROMETER

Seymour Edelman, Silver Spring, and Beverly F. Payne, Gaithersburg, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 19, 1980, Ser. No. 131,575
Int. Cl.³ G01P *15/09*
U.S. Cl. 73—517 R **9 Claims**



1. An accelerometer comprising a frame; a first sheet of piezoelectric polymer film having an inner surface and an outer surface and mounted in said frame under tension; a second sheet of piezoelectric polymer film having an inner surface and an outer surface and mounted in said frame under tension; an inertial mass disposed between said first and second sheets and in contact therewith such that acceleration of said mass causes a change in the tension on both of said sheets; at least one electrode comprising a metallic coating on said first sheet; a measuring means; and an electrical conductor connecting said electrode to said measuring means.

4,315,434

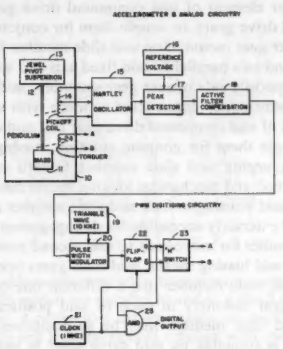
PULSE WIDTH MODULATION (PWM) WITH JEWEL PIVOT ACCELEROMETER

Marcus R. Eastman, Orlando, Fla., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 21, 1980, Ser. No. 152,001
Int. Cl.³ G01P *15/13*
U.S. Cl. 73—517 B **1 Claim**

1. In an accelerometer having a pendulous mass mounted by a jewel pivot suspension with a pivot bearing, a pickoff coil,

and a torque coil, the improvement comprising a Hartley oscillator having an input connected to said pickoff coil for sensing the current in the pickoff coil and producing an analog output signal proportional thereto at an output of said oscillator; a peak detector having an input connected to the output of said oscillator and having an output: a filter having an input connected to said output of said detector and having an output; a pulse width modulator connected to output of said filter for converting the analog signal into a pulse width modulated



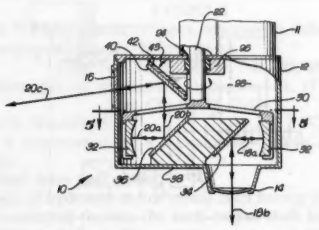
digital output; gating means connected to said pulse width modulator so as to produce a digital output proportional to changes sensed by the accelerometer; said gating means comprising a flip-flop having an input connected to an output of said pulse width modulator and having two outputs; an "H" switch having inputs connected to the outputs of said flip-flop and having an output; and said outputs of said "H" switch being connected to said torque coil for nulling said accelerometer and burnishing the pivot bearing.

4,315,435

DUAL SCAN ULTRASONIC SCANNER

Andrew Proudian, Chatsworth, Calif., assignor to Second Foundation, Chatsworth, Calif.

Filed Jun. 30, 1980, Ser. No. 164,316
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—628 **16 Claims**



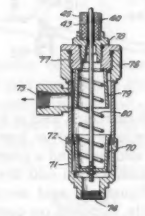
1. A dual scan ultrasonic scanner comprising:
a housing;
one or more ultrasonic transducers movably mounted within the housing;
drive means for causing the transducer(s) to traverse an arcuate path within the housing;
first reflector means positioned within the arcuate path for receiving and reflecting ultrasonic waves from the transducer(s), wherein said first reflector means are oriented with respect to the ultrasonic waves to cause the ultrasonic waves to scan across the first reflector means and are reflected to converge at a point a preselected distance in front of the first reflector means; and
second reflector means positioned within the arcuate path for receiving and reflecting ultrasonic waves from the transducers, wherein the second reflector means are oriented with respect to the ultrasonic waves to cause the ultrasonic waves to diverge as they exit from the housing.

4,315,436

FLOW-RATE TRANSDUCER WITH ELECTRICAL OUTPUT

Garry-Owen McCabe, New Hartford, and William P. Milish, Bristol, both of Conn., assignors to Transamerica DeLaval Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 117,791, Feb. 1, 1980. This application Jun. 12, 1980, Ser. No. 158,869
Int. Cl.³ G01F *1/24*
U.S. Cl. 73—861.54 **17 Claims**



1. A fluid-flow responsive electric transducer, comprising a valve body having a fluid passage between an inlet and an outlet, said body including seat structure having a circular opening and dividing said passage into an inlet chamber and an outlet chamber, guide means including a cylindrical-bore formation in fixed adjacent relation to said seat structure and within said outlet chamber, said bore formation being coaxial with and of greater radius than said seat opening, a cupped piston structure having a cylindrical outer surface portion in close clearance relation with the seat opening, said piston structure having a closed end in the inlet chamber and an open end exposed to the outlet chamber, said piston structure having at its open end a radially outward flange in guided engagement with said bore formation, one of said structures having an elongate slot of predetermined flow-characterizing width in such coacting adjacency with the other of said structures that with piston-member displacement away from a seated no-flow position the effective slot opening increases as a substantially linear function of such displacement, whereby over the slotted region, said piston member will be longitudinally displaced as a substantially linear function of rate of flow for a given fluid in said passage, and electrical transducer means including a part connected to said piston and a part mounted to said body and producing an electrical output signal having a varying parameter which is a substantially linear function of piston displacement.

4,315,437

DEVICE FOR DRIVING AND DISPLACING A BEAM RESTING UPON GUIDE RAILS, AND ONE OR MORE CARRIAGES ATTACHED TO THE BEAM

Jean Etcheparre, and Bernard Etcheparre, both of Merignac, France, assignors to Societe Lectra Systemes, S.A., Pont de le Maye, France

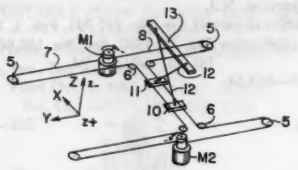
Filed Jul. 25, 1978, Ser. No. 927,862
Claims priority, application France, Jul. 25, 1977, 77 23575
Int. Cl.³ F16H *27/02*
U.S. Cl. 74—89.22 **2 Claims**

1. A device for driving and displacing a beam and at least one carriage attached to said beam, said device comprising:
(a) a beam displaceable in a direction parallel to two guide rails;

(b) at least two carriages displaceable in a direction transverse to said parallel direction;

(c) two crossed arms, each of said arms being attached at one end to one of said carriages and at a second end to an upper cross piece adapted to support an external member; and

(d) at least one cable stretched over a plurality of pulleys and wound around each of two drums which extend from motors rotatable in at least two directions, each of said carriages being attached to a different portion of said cable, wherein said at least one cable, said pulleys and said drums combine to effect displacement of at least one of



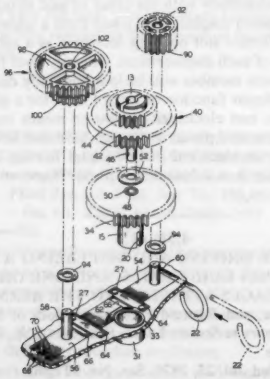
said beam and said carriages, said at least one cable being stretched symmetrically over at least two pulleys connected to ends of said rails and a plurality of said pulleys attached to said beam so that said stretched cable defines an H-shaped configuration, said motors and said drums being symmetrically disposed on opposite rails between the ends of said rails, and said cable being wound symmetrically on opposite directions about each of said drums, whereby rotation of said motors will wind the cable on one of said drums and unwind the cable on the other of said drums, such that the carriages are displaced symmetrically by the rotation of at least one of said motors such that said cross piece will be displaced in a vertical plane.

4,315,438

CONVERSION ASSEMBLY FOR DISPENSING PUMPS AND THE LIKE

Tom Stephenson, Simsbury, Conn., assignor to Petroleum Meter & Pump Co., Inc., Avon, Conn.

Filed Apr. 21, 1980, Ser. No. 142,039
Int. Cl.³ F16H *3/34*
U.S. Cl. 74—352 **13 Claims**



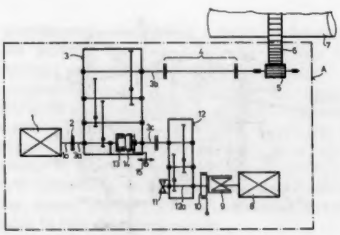
1. A converter for a fuel pump computer comprising: a housing; a drive shaft in said housing mounted for rotation about a fixed axis and adapted for driven engagement with the pump meter; a driven shaft in said housing coaxially rotatably mounted and adapted for driving engagement with the variator of the computer; a gear assembly comprised of two drive gears coaxially disposed for independent rotation about said fixed axis, at least one of said drive gears being a compound gear including first and second coaxial gear elements, said drive shaft and said driven shaft each being fixed to a different one of said drive gears; a slide member mounted in said housing adjacent said gear assembly for movement between first and second positions; a first idler gear mounted on said slide member for rotation about a first axis parallel to said fixed axis and spaced laterally to one side of said gear assembly, said first idler gear being constructed complementarily to mesh with said first gear element of said compound drive gear and the other of said drive gears, to couple them for conjoint rotation; a second idler gear mounted on said slide member for rotation about a second axis parallel to said fixed axis and spaced laterally to the opposite side of said gear assembly, said idler gear being complementarily constructed to mesh with said second gear element of said compound drive gear and said other drive gear, to couple them for conjoint rotation; biasing means in said housing urging said slide member toward said second position thereof; and mechanical locking means disengageably mounted in said housing to lock said slide member in said first position, and exteriorly accessible for disengagement to release said slide member for movement to said second position under the force of said biasing means, said idler gears being so positioned on said slide member that a different one of them engages said gear assembly in each of said positions thereof, whereby said slide member may be so positioned that said driven shaft is rotatable by said drive shaft in one ratio, by effecting the engagement of said first idler gear simultaneously with said other drive gear and said first gear element of said compound drive gear, and whereby said slide member may be repositioned so that said driven shaft is rotatable by said drive shaft in a different ratio, by effecting the interengagement of said second idler gear simultaneously with said other drive gear and said second gear element of said compound drive gear.

4,315,439

DRIVE APPARATUS FOR ROTARY UNIT

Heinz Grachtrup, Ennigerloh, Fed. Rep. of Germany, assignor to Krupp Polysius AG, Beckum, Fed. Rep. of Germany

Filed May 14, 1980, Ser. No. 149,837
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1979, 7916367[U]
Int. Cl.³ F16H *37/06*
U.S. Cl. 74—661 **22 Claims**



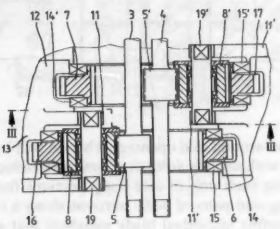
1. In a drive arrangment for a rotating unit, such as a rotary kiln, a drum mill, or the like having a main motor, a main transmission unit arranged between the main motor and the unit to be driven, an auxiliary motor, an auxiliary drive transmission unit arranged between the auxiliary motor and the main transmission unit, a centrifugal brake arranged between the auxiliary motor and the main transmission unit, and an overriding clutch rotatable in each of two opposite directions for overriding the auxiliary drive, the improvement comprising a shift clutch engageable with the overriding clutch for arresting the overriding clutch in both directions of rotation.

4,315,440

DOUBLE SCREW EXTRUDER TRANSMISSION

Siegfried Chszaniecki, Hanover, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Fed. Rep. of Germany

Filed Oct. 10, 1979, Ser. No. 83,324
Claims priority, application Fed. Rep. of Germany, Dec. 4, 1978, 2852445
Int. Cl.³ F16H *37/06, 57/00, 3/44*
U.S. Cl. 74—665 G 2 Claims



1. A double-screw extruder transmission comprising two driven shafts which are parallel to and at a small spacing from one another, a respective driven pinion on each of said two driven shafts and secured against rotation with respect thereto, said two driven pinions being axially displaced relative to one another, two sets of three intermediate gears, one for each of said two driven pinions, each of said sets of three intermediate gears being meshed with a respective one of said driven pinions and equiangularly spaced therearound, a pair of ring gears, a transmission housing mounting said pair of ring gears, each of said ring gears surrounding and being meshed with a respective one of said sets of intermediate gears and located coaxially with the respective one of said driven pinions and drive means for said ring gears, wherein each of said driven pinions and two of the gears of each of said sets of three intermediate gears are disposed without mounting and the third gear of each of said sets of intermediate gears is mounted so as to be displaceable in directions radially of the respective one of said driven pinion, all of said gears of said sets of intermediate gears being capable of floating relative to each other and relative to said driven pinions so as to uniformly transmit power to said driven pinions.

4,315,441

TRANSMISSION FOR A HYDRAULICALLY DRIVEN VEHICLE

Eiichi Fukuda, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Dec. 10, 1979, Ser. No. 101,436
Claims priority, application Japan, Dec. 11, 1978, 53-151914
Int. Cl.³ F16H *37/06*
U.S. Cl. 74—665 M 2 Claims

1. A transmission for a hydraulically driven vehicle, comprising:

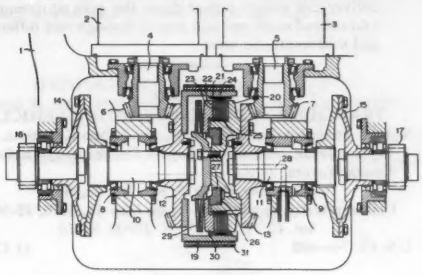
a final drive gear casing;

a pair of hydraulic motor means each having an output shaft connected thereto, the each output shaft being extended into said final drive gear casing and having formed thereon a bevel pinion;

a pair of final drive shaft means each being rotatably supported by said final drive gear casing and aligned with each other;

a pair of bevel gears each fixedly mounted on said respective final drive shaft means, each of said bevel gearing being adapted to mesh with said respective bevel pinions;

clutch means provided between said pair of final drive shaft means for directly connecting and disconnecting said pair of final drive shaft means, said clutch means including a clutch housing fixedly secured to one of said bevel gears, cylinder means fixedly secured to the other of said bevel gears, said cylinder means having a hydraulic cylinder chamber formed therein, piston means mounted within said hydraulic cylinder chamber, a plurality of annular plates fixedly mounted on the inner face of said clutch



housing, a plurality of discs mounted on said cylinder means, each of said discs being alternately arranged with respect to said annular plates, and spring means for urging said plurality of discs toward said annular plates; and

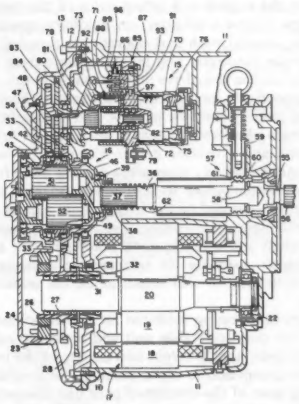
brake means mounted on said clutch means.

4,315,442

AIRCRAFT GENERATOR STARTER-DRIVE

Michael A. Cordner, Mount Morris, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Feb. 15, 1980, Ser. No. 122,147
Int. Cl.³ F16H *47/04*
U.S. Cl. 74—687 23 Claims



11. A starter-drive for use between an aircraft engine and a generator/motor to transmit in either direction, comprising:

a first shaft connectible with said generator/motor,

a second shaft connectible with said engine,

a differential including first, second and third elements, said first element rotatable with said second shaft and said third element rotatable on said second shaft,

a first hydraulic unit drivingly connected to said first element,

a second hydraulic unit drivingly connected to said second element,

said first and second hydraulic units hydraulically interconnected through and controlled by a control valve,

said third element drivingly connected through a first clutch

to said first shaft for driving said generator/motor in a generating mode, and through a second clutch to said first shaft for driving said engine from said generator/motor in a starting mode,

said control valve operative in said starting mode to control flow between said hydraulic units to thereby divide the delivery of rotary power from the generator/motor to said second shaft and said engine through said differential and said hydraulic units.

4,315,443

TRANSMISSION FOR USE IN MOTOR VEHICLE

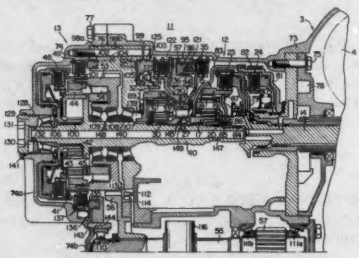
Seitoku Kubo; Koujiro Kuramochi, and Tatsuo Kyushima, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 11, 1979, Ser. No. 38,285

Claims priority, application Japan, May 11, 1978, 53-56116

Int. Cl.³ F16H *37/08, 47/00, 57/10*

U.S. Cl. 74—695 **11 Claims**



1. In a motor vehicular transmission for transmitting power between the engine and wheel axles of the type including a fluid-type torque converter; an auxiliary speed-change gear assembly coaxial with and operatively coupled to said fluid-type torque converter and including an output means with a first gear, and an overdrive unit and an underdrive unit, each of units respectively having at least a planetary gear unit with sun and ring gears, planetary pinions, and a planetary carrier, for providing a plurality of forward speed range drives including overdrive, and a reverse drive, wherein said auxiliary speed change-gear assembly transmits a driving force from said fluid-type torque converter to said output means; a countershaft extending in parallel to the longitudinal axis of said auxiliary speed change-gear assembly; a second gear mounted on said countershaft and meshing with said first gear; and a final reduction-gear assembly for transmitting a driving force from said countershaft to said wheel axles, the improvement comprising:

at least one bearing mounted on a shaft holding said carrier of the overdrive gear unit and rotatably supporting said first gear; and, wherein said carrier of the overdrive gear unit comprises an input element for overdrive and said ring gear of the overdrive gear unit comprises an output element for overdrive, and said first gear is mounted coaxial with said overdrive ring gear.

4,315,444

METHOD OF MANUFACTURE OF BLADE MEMBERS FOR WIRE STRIPPING DEVICE

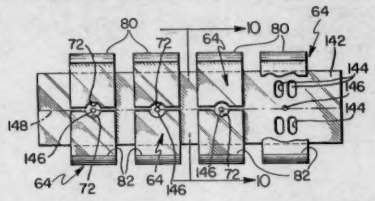
Joseph A. Perrino, Rehoboth, Mass., and Thomas W. Perrino, Johnston, R.I., assignors to Micro Electronics, Inc., Rehoboth, Mass.

Division of Ser. No. 12,663, Feb. 16, 1979, Pat. No. 4,271,729. This application Mar. 9, 1981, Ser. No. 241,702

Int. Cl.³ B21K *5/12;* B21D *28/06*

U.S. Cl. 76—101 R **3 Claims**

1. A method of forming a blade member for use in a wire stripping device, comprising the steps of blanking out an elongated strip of thin blade material to form a plurality of flow-through openings arranged in spaced apart groups and a hole of reduced predetermined diameter located intermediate the longitudinal edges of said strip and centrally of each group of said flow-through openings, molding pairs of body portions on



said strip and around said openings wherein said body portions are formed with arcuate notches around said reduced diameter holes, cutting each pair of said body portions from said strip and breaking said pairs of body portions along a common line thereof to define individual blade members that are usable in said wire stripping device in cooperating relationship.

4,315,445

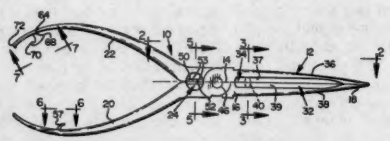
KNOT TYING TOOL

Woodrow Catron, P.O. Box 104, Mosier, Oreg. 97040

Filed Mar. 31, 1980, Ser. No. 135,505

Int. Cl.³ B25B *7/00*

U.S. Cl. 81—5.1 R **4 Claims**



1. A hand tool for use in tying knots in fishing line and the like, comprising:

(a) a tapered elongate finger having a base and a relatively smaller tip, said finger comprising mating first and second elongate halves, each also having a base and a tip, said finger having a longitudinal axis and height and width dimensions orthogonal to said longitudinal axis and being tapered along said longitudinal axis in said height and width dimensions from maximum height and width at said base toward minimum height and width at said tip;

(b) handle means comprising a pair of elongate handles for holding said tool during its use, each of said handles being affixed to the base of a different one of said first and second elongate halves and extending away from said tips of said respective halves, said handles crossingly overlapping one another at a location adjacent said bases of said halves, and said handles being pivotally connected to one another such that said first and second halves may be moved between a position of mating contiguity and a position in which said halves are separated from one another;

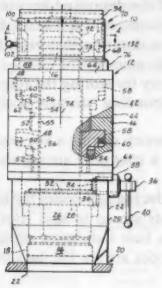
(c) said elongate finger defining a groove therein, said groove extending along the longitudinal dimension of said finger from said base toward said tip, the depth of said groove decreasing in the direction of said tip; and

(d) means for tightening a loop, including a pair of opposed cavities defined respectively by said first and second halves of said elongate finger, said cavities opening toward one another for receiving respective portions of a loop and being movable toward and away from one another in response to movement of said handles relative to one another.

4,315,446
STUD TENSIONING DEVICE

Joseph N. Orban, 18 La Salle Ave., Cranford, N.J. 07016

Filed Apr. 30, 1979, Ser. No. 34,500
Int. Cl.³ B25B 29/02
U.S. Cl. 81—57.38 15 Claims



1. A tensioning device for an engaging member having a lower engaging section and an upper engaging section to be placed in tension to a predetermined load upon the lower engaging section, said device comprising:

(a) a housing having a power unit therein to expand and retract within the housing whereby the upper engaging section is adapted to be tensioned and released;

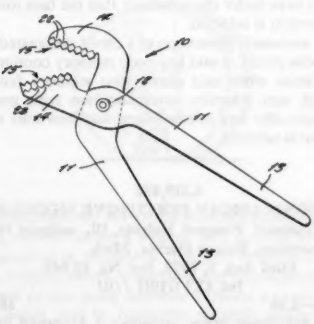
(b) a cam and clamp assembly comprising a segmented clamp and a plurality of elements interconnected between the housing and the segmented clamp, said plurality of elements actuated to provide motion between the elements, each of the adjacent moving elements of said cam and clamp assembly moving in different modes from each other;

(c) guide means within the housing slideably engaging and moving said segmented clamp between a closed position for clamping the engaging member and an open position for releasing the engaging member upon actuation of said cam and clamp assembly to close or open the clamp.

4,315,447
NO MAR PLIERS

Lawrence Tartaglia, c/o George Spector 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Apr. 17, 1980, Ser. No. 141,045
Int. Cl.³ B25B 7/02
U.S. Cl. 81—421 3 Claims

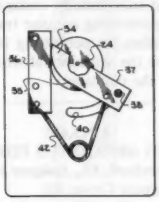


1. A no-mar pliers, comprising in combination, a pair of crossing, metal levers, one ends of said levers forming handles for being squeezed together in a hand, an opposite end of said levers forming mating jaws for grasping work therebetween, and each jaw being lined with a removable insert made with molded rubber impregnated with magnetic particles wherein each said insert is made of a plurality of longitudinal, cross sectionally hexagonal sections adjacent each other so to form a toothed face on each opposite side of said insert.

4,315,448
HYPODERMIC NEEDLE DESTRUCTOR

Edward W. Ball, 3418 Sleepy Hollow, Wichita, Kans. 67208

Filed Jul. 28, 1980, Ser. No. 172,968
Int. Cl.³ B23D 15/04, 21/06
U.S. Cl. 83—167 8 Claims



1. A hypodermic needle destructing device comprising:

a receptacle;

a base plate positioned on the front of the receptacle;

a pivotally mounted knob on the base plate having an opening in the center thereof adapted to receive hypodermic needles;

a knife blade means pivotally supported against the base plate approximate one end of the blade means;

a slot in the base plate;

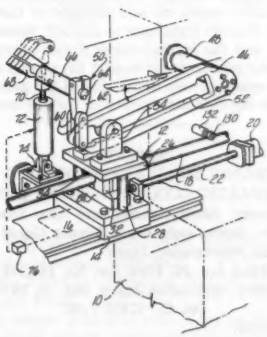
pin means anchored to the knob passing through the slot in the base plate and pivotally attached to the opposite end of the knife blade whereby rotation of the knob causes the knife blade to pivot from its retracted position across said opening and shear the needle which is extending through said opening; and

biasing means on the knife blade urging the blade toward its retracted position.

4,315,449
CAM OPERATED CUTOFF MACHINE

John J. Borzym, 4820 Schoolbell, Birmingham, Mich. 48010

Filed May 2, 1980, Ser. No. 145,648
Int. Cl.³ B23D 25/04
U.S. Cl. 83—319 25 Claims



1. In a machine for shearing linearly moving stock into discrete lengths wherein said machine is of the type having a

base, a carriage mounted on the base for movement relative to the base and along a path parallel to the path of movement of the stock, a motive power source for displacing the carriage between extended and retracted positions, and a mechanism mounted on the carriage comprising a shearing element movable through a reciprocal cycle comprising a shearing stroke and a withdrawal stroke to shear the stock, the improvement comprising:

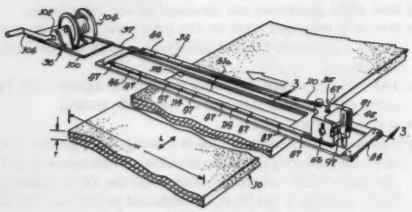
a cam member pivotally mounted on the base adjacent the end of the retracted position of the carriage and aligned with the path of carriage travel, a follower connected to the shearing element and operatively associated with the cam member to drive said element through said shearing stroke as the carriage is moved by the motive power source with and in the direction of the stock using power supplied at least substantially exclusively by said source, and means for permitting angular travel of the other end of the cam member for permitting travel of the shearing element through the withdrawal stroke independently of linear travel of the carriage.

4,315,450

METHOD OF AND APPARATUS FOR SCIVING BELTS

Winston C. Pray, Lombard, Ill., assignor to Flexible Steel Lacing Company, Downers Grove, Ill.

Filed Jan. 25, 1980, Ser. No. 115,366
Int. Cl.³ B26D *3/06, 9/00*
U.S. Cl. 83—862 **10 Claims**



1. A method of forming a groove in a belt end and in cutting off the portion of the belt to form a butt end comprising the steps of: securing a support means onto one face of the belt means crosswise of the belt means and in the general area it is desired to form a butt end, adjusting first cutter means on a carriage relative to the support means so that the first cutter means lines up below the one belt means face, connecting a power means to said carriage, advancing the first cutter means across the belt means and the support means by said power means so that the first cutter means cuts a slice from the one face to leave a groove crosswise of the belt means, adjusting a belt cutoff cutter means on said carriage so that the second cutter means lines up transverse to the belt means, advancing the carriage and the second cutter means along the means support by said power means so that the second cutter means cuts the belt means in two in the area of the groove to define a butt end for the first end portion of the belt means.

4,315,451

ELECTRONIC MUSICAL INSTRUMENT WITH AUTOMATIC ACCOMPANIMENT DEVICE

Yasuji Uchiyama; Akira Nakada, and Akio Imamura, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jan. 22, 1980, Ser. No. 114,248
Claims priority, application Japan, Jan. 24, 1979, 54-7391
Int. Cl.³ G10F *1/00*
U.S. Cl. 84—1.03 **7 Claims**

1. In an electronic musical instrument, the improvement comprising:

keys for playing notes of the instrument;

a key detection circuit coupled to said keys for producing per each of depressed ones of said keys a key code which represents a name of the key;

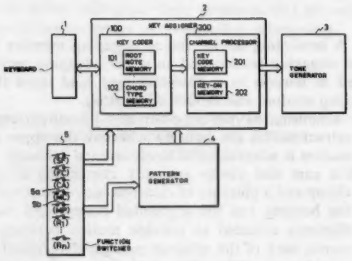
a tone generator circuit including a plurality of tone production channels respectively for generating musical tone signals as designated by the key codes supplied thereto;

a key code memory having storage positions corresponding in number to said tone production channels and storing key codes of the depressed keys in a certain subset of said storage positions, and a circuit for providing a key-on signal for the duration that each key code is supplied to said key code memory;

a key-on memory for storing the respective key-on signal for each corresponding storage position of said key code memory;

a root note memory storing a key code of a single key corresponding to a root note among the keys depressed in the keyboard;

means for producing key codes for bass tones in accordance with contents stored in said root note memory and for producing a bass indication signal which indicates that these key codes are for the bass tones;



an automatic performance circuit for supplying said key codes for bass tones to said key code memory in a rhymic pattern, said bass indication signal causing said supplied bass tone key codes to be entered into storage positions in said key code memory of other than said certain subset;

first means for selecting a chord tone memory function,

second means, independent of said first means, for selecting a bass tone memory function,

means for maintaining storage, in the positions of said key-on memory corresponding to said certain subset of storage positions, of signals indicating the on-state after release of said each keys under the condition that the chord tone memory function is selected, and

means for continuing the production of said bass tone key codes and bass indication signal after release of the depressed keys under the condition that the bass tone memory function is selected,

whereby automatic generation of a chord designated by said key codes stored in said key code memory continues after key release when said chord tone memory function is selected, and whereby automatic bass tone generation continues after key release when said bass tone memory function is selected.

4,315,452

ELECTRONIC ORGAN PERCUSSIVE MODULATOR

David A. Yoshinari, Prospect Heights, Ill., assignor to Whirlpool Corporation, Benton Harbor, Mich.

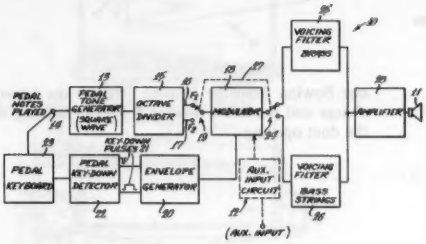
Filed Aug. 2, 1979, Ser. No. 62,949
Int. Cl.³ G10H *1/02*
U.S. Cl. 84—1.26 **18 Claims**

1. In an electronic organ including a keyboard having a plurality of selectively actuatable keys, and tone generator means for producing rectangular pulses at any one of a plurality of different frequencies individually determined by a partic-

ular key which is actuated, means for generating sounds simulating percussive tones produced by musical instruments, said generating means comprising:

a differentiating circuit coupled to said tone generator means for receiving and differentiating said rectangular pulses to provide differentiated tone generator pulses;

a modulator circuit connected so as to receive said differentiated tone generator pulses from said differentiating circuit and having a control input and means for clipping so as to distort said tone generator pulses at a level determined by a signal applied to said control input;



an envelope signal generating circuit having an output connected to said modulator circuit control input, said envelope generator producing a percussive envelope signal provided to said control input for causing variable clipping by said clipping means of said differentiated tone generator pulses as an incident of each key actuation, the waveshape of said variably clipped differentiated tone generator pulses being non-rectangular; and

means for providing an audible sound corresponding to the variably clipped differentiated tone generator pulses produced by said modular circuit.

4,315,453

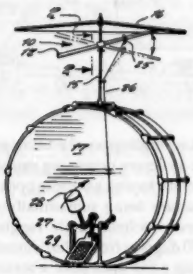
PERCUSSION AID

Charles Gabor, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Jan. 18, 1980, Ser. No. 113,310

Int. Cl.³ G10D *13/02*

U.S. Cl. 84—422 R **5 Claims**



1. A percussion aid device comprising a collar for adjustably securing said device on a cymbol post in combination with a sleeve adapted to adjustably receive a drumstick therein including resilient means connecting said sleeve pivotally to said collar said device being mounted adjacent a cymbol whereby the drumstick may be resiliently pivotally displaced relative the collar to strike the cymbol, in further combination with a wire connected to drumstick and a foot pedal, including means to adjust the torsional resiliency of the said resilient means.

4,315,454

PISTON FOR A METERING DEVICE AND A METHOD OF PRODUCING SAME

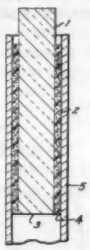
Erich R. Knödel, Wertheim-Kembach, Fed. Rep. of Germany, assignor to Walter Graf u. Co. GmbH & Co., Wertheim am Main, Fed. Rep. of Germany

Filed Feb. 6, 1978, Ser. No. 875,155

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1977, 2743911

Int. Cl.³ F01B *29/08*; F16J *1/02*

U.S. Cl. 92—170 **3 Claims**



1. A metering dispenser comprising a piston slidable in a glass cylinder, said piston comprising n elongated cylindrical core consisting of glass or ceramic material and a casing of polytetrafluoroethylene characterized in that the casing consists of a prefabricated elongated massive uniform tube of polytetrafluoroethylene reinforced with 20–40% by weight of glass fibers sufficient to reduce the coefficient of linear thermal expansion of said casing by 20 to 50 percent from that of unfilled polytetrafluoroethylene and having a wall thickness between about 1 and 3 mm, with said tube being thermally shrunk on the cylindrical surface of said core without an adhesion promoter effecting a casing texture reversal and said casing having an external diameter substantially equal to the internal diameter of said glass cylinder.

4,315,455

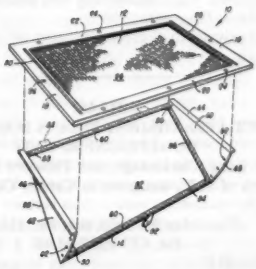
ADJUSTABLE SOFFIT VENT

James L. Shaklee, Rte. 6, Box 11, Enid, Okla. 73701

Filed Feb. 19, 1980, Ser. No. 122,445

Int. Cl.³ F24F *13/00*

U.S. Cl. 98—32 **7 Claims**



1. A roof vent for installation under roof eaves to provide adjustment of ventilation, comprising:

frame means defining a central air flow space of generally rectangular form;

foraminous means formed in said central air flow space;

first and second slots formed through said frame means on opposite sides of said central air flow space; and

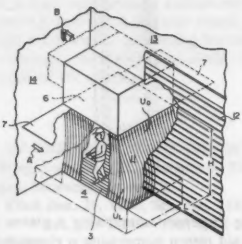
air scoop means formed as a panel having opposite sides formed perpendicularly for interlocking reception up

through said first and second slots so that said air scoop means may be positioned in selected positions to regulate the degree of opening to said central air flow space.

4,315,456
AIR-CURTAINING APPARATUS FOR FIRE PROTECTION

Taro Hayashi, Nara, and Aritsune Moriyama, Nishinomiya, both of Japan, assignors to Sanko Air Plant, Ltd., Osaka, Japan

Filed Dec. 5, 1979, Ser. No. 100,289
Int. Cl.³ F24F 9/00
U.S. Cl. 98—36 **9 Claims**



5. An air-curtaining apparatus used in a fire escape passage of a underground town or the like so as to protect escapers from smoke and gases caused in the underground town by fire, said air-curtaining apparatus comprising:

a supply means defining a supply opening to eject an air flow in the form of an air-curtain with a uniform air velocity distribution across the cross-sectional area of said supply opening, said supply means including a first flow-rate equalizing means, a perforated plate and a grille disposed one above the other;

a supply duct connecting said supply means to an air-supply fan means;

an exhaust means defining an exhaust opening of a size to receive both said air-curtain and additional air attracted from the surroundings by said air-curtain, with uniform air velocity distribution, wherein said exhaust means includes a second flow-rate equalizing means and an exhaust chamber disposed one above the other, and said exhaust opening and said supply opening are spaced apart and are opposite to each other;

a first exhaust duct connecting said exhaust means to an air-exhaust fan means; and

a second exhaust duct connecting said air exhaust means to open air.

4,315,457
DUCT ATTACHMENT MEANS FOR AN AIR CONDITIONING UNIT

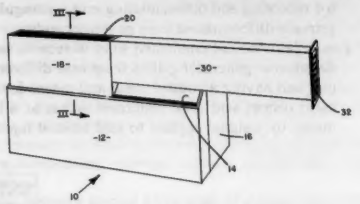
Richard D. Lang, Chittenango, and Theodore S. Bolton, Liverpool, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed May 19, 1980, Ser. No. 151,040
Int. Cl.³ F24F 13/02
U.S. Cl. 98—40 C **10 Claims**

7. Apparatus for attaching a duct to an air conditioning unit having a conditioned air discharge opening covered by a removable grille which comprises:

a housing connected to receive the conditioned air discharged from the air discharge opening, said housing having a housing air discharge opening and a duct opening formed therein and including means for securing the housing to the air conditioning unit at the discharge opening;

means located within the housing for directing conditioned air discharged from the air conditioning unit between the housing air discharge opening and the duct opening, whereby the conditioned air being discharged from the unit may be dispersed to separate discharge air streams

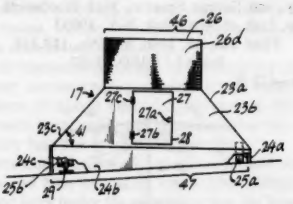


one flowing from the housing through the housing discharge and the other flowing from the housing through the duct opening.

4,315,458
VENTILATED WIND-DIVERTER SHED FOR MAN-SPRAYING OF POLYURETHANE FOAM FROM WITHIN ONTO ROOFS

Raymond M. Hudson, III, P.O. Box 443, Bernardsville, N.J. 07924

Filed Dec. 1, 1980, Ser. No. 211,706
Int. Cl.³ B05C 15/00
U.S. Cl. 98—115 VM **12 Claims**



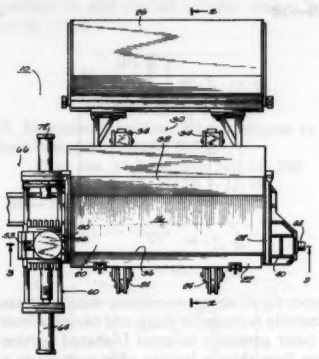
1. A ventilated wind-diverter shed comprising in combination: an enclosure structure consisting essentially of a circumscribing wall structure having a bottom open port, said circumscribing wall structure being substantially upright at an upwardly and inwardly-inclined angle ranging from about 40 degrees to about 70 degrees from a horizontal, and said circumscribing wall having a top open port; a screen means mounted across said top open port, said screen means being for providing air ventilation to space shaped by said circumscribing wall structure from exterior air and for limiting polyurethane spray droplets-escape during spraying downwardly through said bottom open port from within the space; said circumscribing wall structure having dimensions along a horizontal and along height sufficiently large such that said space is large enough to house an upright man and spraying equipment; and travel means mounted onto said circumscribing wall structure along substantially a horizontal during spraying of polyurethane downwardly through said bottom open port.

4,315,459

METHOD FOR PROCESSING METAL MATERIAL INTO BALES

Roman Schmalz, Milwaukee, Wis., assignor to Logemann Brothers Company, Milwaukee, Wis.

Continuation of Ser. No. 126,423, Mar. 3, 1980, abandoned, which is a division of Ser. No. 22,805, Mar. 22, 1979, Pat. No. 4,230,037. This application Apr. 3, 1981, Ser. No. 250,881
Int. Cl.³ B30B 1/32
U.S. Cl. 100—39 4 Claims



1. A method of forming compact bales of material comprising the following steps:

(a) introducing the material to be baled into a first baling chamber, said baling chamber comprised of a bottom, four walls and an open top;

(b) positioning a cover member on the open top of the first baling chamber to seal the material therein;

(c) compressing the material in the first baling chamber into the shape of a block by applying pressure to said material in a horizontal direction from one side of the first baling chamber;

(d) feeding an end section of the block from the first baling chamber into an interconnected second baling chamber, said feeding movement being in a direction at right angles to the direction of the baling pressure applied to said material as recited in paragraph (c);

(e) severing the end section located in the second baling chamber from the body of the block; and

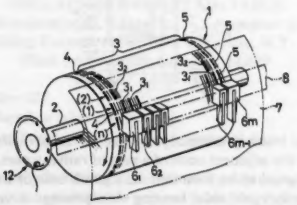
(f) compressing the severed end section in the second baling chamber to thereby form a completed bale.

4,315,460

DRUM TYPE LINE PRINTER

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato, Japan

Filed Jan. 31, 1980, Ser. No. 117,269
Claims priority, application Japan, Feb. 15, 1979, 54-17144
Int. Cl.³ B41J 9/12
U.S. Cl. 101—93.09 4 Claims



1. A drum type line printer for printing bar codes in a line, comprising: a drum; a plurality of axial lines of imprintable bar code characters on the surface of the drum; in each line of the characters, there are a first plurality of information characters and at least one control character, and the control character is adjacent to at least one of the information characters in the line;

a first plurality of printing hammers, one for each of the information characters, each for striking the respective information characters so that the information character may be printed;

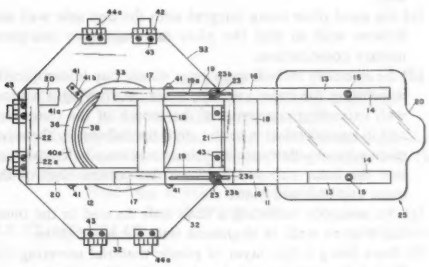
the one printing hammer for the at least one information character adjacent to the control character being of greater width than the other printing hammers for the one printing hammer to simultaneously strike both the control character and the adjacent at least one information character in that line.

4,315,461

SCREEN PRINTING MACHINE

C. W. Harpold, 274 Greenbrier Dr., SE., Grand Rapids, Mich. 49506

Filed Oct. 1, 1979, Ser. No. 80,450
Int. Cl.³ B41F 15/04
U.S. Cl. 101—115 13 Claims



1. A screen printing machine, comprising:

a frame;

a printing platen fixedly connected with said frame and adapted to receive thereon an article to be printed;

a printing head having at least two pairs of C-shaped clamps; each pair of clamps being hingedly attached to a different side of said printing head for connecting therewith at least two printing screens having different, mating designs therein arranged to print a bifurcated pattern on said article, and each of said screens having an end segment; each of said clamps having an open face which is oriented outwardly and adapted to receive and retain the end segment of said printing screens therein; means for rotatably connecting said printing head with said frame, whereby selective rotation of said printing head sequentially positions said screens over said platen; and means for translating each of said printing screens between a printing position wherein said screens are sequentially aligned with said printing platen and abuttingly overlie the article thereon, and a storage position wherein said printing screens are spaced apart from said printing platen;

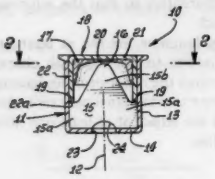
means for slideably connecting said printing head with said frame for varying the distance between said printing head and said printing platen and selectively locating the position of said pattern on said article without disturbing the registry between the designs on said printing screens; and

a registry stop connected with said frame and having first and second portions between which at least one of said clamps are received and retained in said printing position for positively positioning said screens in a predetermined angular relationship with said printing platen.

4,315,462
SHOT GUN SHELL PRIMER

Gary L. Vollers, 11471 Tampa Ave., No. 149, Northridge, Calif. 91336

Filed Sep. 10, 1979, Ser. No. 73,950
Int. Cl.³ F42C 19/10
U.S. Cl. 102—204 7 Claims

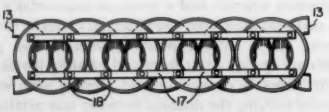


1. In a primer assembly for a shot gun shell,
(a) a one-piece unitary plastic outer cup defining an axis and having a cylindrical side wall and a bottom wall,
(b) and a plastic anvil plate extending in an axial radial plane transversely within and crosswise of the cup interior, the plate having an anvil tip facing toward the mouth of the cup,
(c) the anvil plate being integral with the cup side wall and bottom wall so that the plate and cup have one-piece unitary construction,
(d) the assembly including an inner plastic cup telescopically interfitting the outer cup, the inner cup having a bottom wall extending crosswise of the mouth of the outer cup and in spaced relation to the anvil tip defined by the anvil plate whereby detonatable primer mix may be introduced into the inner cup and between the bottom wall of the inner cup and said plate,
(e) the assembly including a flash hole formed in the outer cup bottom wall, in alignment with the anvil plate,
(f) there being a thin layer of plastic material covering the flash hole, said layer being integral with said plate and bottom wall to be ruptured in response to detonation of the primer mix,
(g) the outer cup, anvil plate and thin layer covering the flash hole being of one-piece molded construction, said plate directly and integrally joined to said cup side wall and bottom wall at locations radially outwardly spaced from said thin plastic layer.

4,315,463
BLASTING MAT

Leo H. Arcand, R.R. #1, Sturgeon Falls, Ontario, Canada (P0H 2G0)

Filed Feb. 5, 1980, Ser. No. 118,851
Int. Cl.³ F42D 5/00
U.S. Cl. 102—303 11 Claims

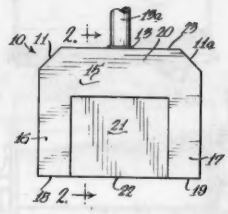


1. A blasting mat comprising
an interconnected array of circumferentially intact vehicle tire elements, comprising alternating contacting rows of tread-to-tread contacting tire elements of similar peripheral dimensions, the tire elements in any given row offset by about one-half a tire diameter from the adjacent tire elements in each adjacent row thus forming a brickwork pattern, and retaining means contacting the tire elements and retaining the tire elements in the said array.

4,315,464
TAMPER TIP FOR RAILROAD TIE TAMPING MACHINES

Walter S. Borden, P.O. Box 866, Racine, Wis. 53403

Continuation of Ser. No. 834,230, Sep. 19, 1977, abandoned. This application Jul. 2, 1979, Ser. No. 53,856
Int. Cl.³ E01B 27/13
U.S. Cl. 104—10 4 Claims

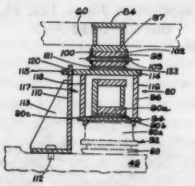


1. A tamper tip of abrasion-resistant metal said tamper tip being of generally rectangular shape and having a front surface having an outer generally inverted U-shaped portion having legs tapering from thinner leading edge portions to a thicker top portion forming the base of the "U" with the top of said base forming the top of the tamper tip, an integral inner portion completely filling the interior part of the U-shaped portion, said inner portion having an exposed edge contiguous with and having the same thickness as the leading edges of the legs to provide a continuous edge of constant thickness, with the length of said continuous edge being greater than the distance from said continuous edge to the top of the tamper tip, and with said inner portion being of substantially constant thickness throughout its extent, said tamper tip having a planar back surface extending from said continuous edge to the top of the tamper tip and with said exposed edge of the inner portion comprising not more than 60 percent of the length of said continuous edge.

4,315,465
CONSTANT CONTACT SIDE BEARING FOR ARTICULATED RAIL CARS

Eugene J. Cordani, St. Louis, and Frederick E. Vorwerk, St. Peters, both of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 929,576, Jul. 31, 1978, abandoned. This application May 27, 1980, Ser. No. 153,470
Int. Cl.³ B61F 3/08, 5/14
U.S. Cl. 105—4 R 35 Claims



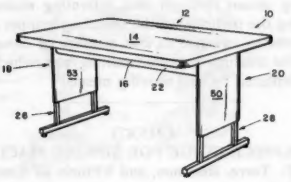
1. A side bearing assembly for use on an articulated truck supporting the adjacent ends of a pair of railway cars, each side bearing adapted to be mounted on a truck bolster on opposite sides thereof; each side bearing comprising: a rectangular channel or tube mounted on the truck and having spaced vertical legs; and a first bearing surface located between said

vertical legs which receives a first extension from one adjacent car end; said first extension being free to slide horizontally on said first bearing; said channel or tube extending above said first bearing surface and having a second bearing surface thereon, and a second extension from the other adjacent car including a pivoted, depending bearing member which rests upon and is supported by said second bearing surface; said pivot allowing the second car end to rotate vertically about said side bearing as vertical inclines are traversed; said depending member being free to slide horizontally upon said second bearing surface as said second car end rotates horizontally relative to the truck.

4,315,466
ADJUSTABLE TABLE

Milton E. Boerigter, Hamilton, Mich., assignor to Fleetwood Furniture Company, Zeeland, Mich.

Filed Jan. 11, 1980, Ser. No. 111,385
Int. Cl.³ A47B *9/12*
U.S. Cl. 108—147 **17 Claims**



1. A continuous height adjustable wheelchair table, comprising:

a member defining a work surface;

a frame structure secured to an underside of said member;

a pair of leg structures, each positioned at an end of said member and said frame structure including means for telescopingly receiving said leg structures;

raising and lowering means positioned underneath said member and connected to said leg structures for continuously raising and lowering said member with respect to said leg structures, said raising and lowering means including:

an actuator having an extendible and retractable rod and means extending under and immediately adjacent the work surface to be accessible by hand operation, said actuator movable in a lineal path of travel for ease of operation by a handicapped operator for extending and retracting said rod;

control means for limiting the extension of said rod; and

flexible motion transmitting means connected to said rod and said leg structures for raising and lowering said member as said rod extends and retracts.

4,315,467
COLLAPSIBLE COCKTAIL TABLE

Robert D. Vanderminden, Granville, N.Y., assignor to The Telescope Folding Furniture Co., Inc., Granville, N.Y.

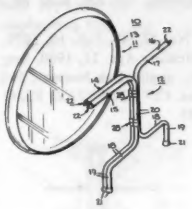
Filed Sep. 7, 1979, Ser. No. 73,389
Int. Cl.³ A47B *3/06*
U.S. Cl. 108—157 **14 Claims**

1. A collapsible table comprising

a table top having a depending peripheral edge;

and

a leg assembly including three pivotally interconnected legs for supporting said table top, each said leg having a vertical post portion disposed about a vertical axis and a radially outwardly directed portion extending from said post portion for frictionally engaging said peripheral edge to secure said table top to said leg assembly with at least one

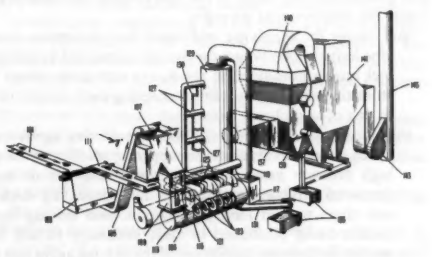


of said legs being pivotal about said axis of a respective leg to frictionally engage said peripheral edge.

4,315,468
CONTROL SYSTEM FOR A SINGLE AUGER STARVED-AIR COMBUSTOR

Robert C. Tyer, Baldwin, Fla.; Robert E. Fitch, Kent, and Gordon H. Tucker, Enumclaw, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed May 9, 1980, Ser. No. 148,374
Int. Cl.³ F23K *3/00*
U.S. Cl. 110—101 CF **8 Claims**



1. A starved-air combustor system comprising:

a combustion chamber having an inlet end for receiving fuel, said combustion chamber for combusting said fuel, said combustion chamber being divided into a plurality of combustion zones;

means for conveying said fuel through said combustion to said combustion zones in said combustion chambers; and

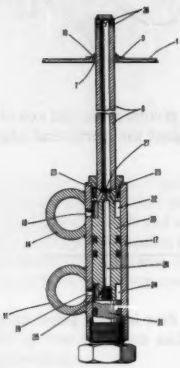
means responsive to the temperatures in said combustion zone for controlling said supply means to supply selected quantities of air to said combustion zones wherein said conveying means conveys said fuel through said combustion chamber at a selectively variable rate and wherein said controlling means controls said supplying means to increase the supply of said air to said combustion zones responsive to an increase in the rate of said conveying means and to decrease the supply of air to said combustion zones responsive to a decrease in said rate of said conveying means.

4,315,469

METHOD AND DEVICE FOR DISTRIBUTING LIQUID FUEL TO A FLUIDIZED BED

Dag Vareide, Nedre Mollenberggate 83, and Odd E. Solheim, Chatarina Lysholms vei 6B, both of, N-7000 Trondheim, Norway

Division of Ser. No. 12,748, Feb. 16, 1979, Pat. No. 4,243,380.
This application Apr. 21, 1980, Ser. No. 142,112
Claims priority, application Norway, Feb. 17, 1978, 780549
Int. Cl.[3] F27B *15/00*; F23G *5/00*
U.S. Cl. 110—245 **6 Claims**



1. In a fluidized bed incinerator comprising a constriction plate supporting a fluidized bed of refractory particles, said constriction plate having a plurality of tuyeres therethrough for supplying fluidizing and primary combustion air to said bed from a windbox provided below the constriction plate; a plurality of substantially vertical risers extending through the constriction plate and feeding liquid fuel to the fluidized bed separate from the combustion air; and means for supplying fuel and gaseous driving agent to the risers below the constriction plate, the improvement wherein

said means for supplying said liquid fuel comprises closed pipe loops within which the fuel circulates and a restricted fuel nozzle positioned at the lower end of the risers for atomizing said fuel and for connecting each of said risers to one of said closed loops; and

said means for supplying said gaseous driving agent comprises a feed pipe system for supplying small quantities of high pressure gaseous driving agent and one or more restricted driving agent nozzles for connecting each of said risers to said feed pipe system, said driving agent nozzles being positioned in close proximity to said fuel nozzles for intimate admixture of the driving agent and the atomized fuel at the lower end of the riser.

4,315,470

WORKPIECE GUIDE CONTROL FOR SEWING UNITS

Giancarlo D. Torre, Biassono, and Luigi Avesani, Bollate, both of Italy, assignors to Rockwell-Rimoldi, S.p.A., Milan, Italy

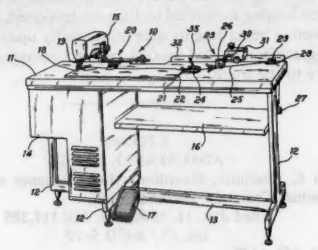
Filed Sep. 10, 1980, Ser. No. 185,835
Claims priority, application Italy, Sep. 25, 1979, 25964 A/79
Int. Cl.[3] D05B *21/00*
U.S. Cl. 112—121.15 **5 Claims**

1. A control apparatus for a workpiece guide mounted for sliding movement on the worksurface of a sewing unit intermediate a sewing machine and a traveling gripper for applying tension to a workpiece being advanced on the worksurface to the stitching instrumentalities of the machine, said control apparatus comprising:

(a) a guide support member (**39**) mounted on the sewing unit for effecting limited longitudinal sliding movement of the guide to a position of close proximity with the stitching instrumentalities;

(b) means operatively connected to said support member for moving the latter and guide carried thereby in a direction perpendicular to the direction of advance of a workpiece;

(c) activating means connected to and for actuating said moving means; and



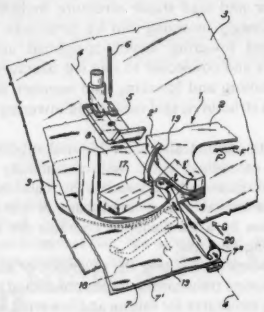
(d) means carried by the traveling gripper for actuating said moving means through said activating means to effect clearing the pathway of the traveling gripper and permit the latter to advance to that position of close proximity with the stitching instrumentalities from which the guide was displaced by said moving means.

4,315,471

WORKPIECE GUIDE FOR SEWING MACHINES

Giancarlo D. Torre, Biassono, and Vittorio de Simone, Milan, both of Italy, assignors to Rockwell-Rimoldi, S.p.A., Milan, Italy

Filed Jul. 24, 1980, Ser. No. 171,880
Claims priority, application Italy, Sep. 7, 1979, 25530 A/79
Int. Cl.[3] D05B *35/10*
U.S. Cl. 112—153 **5 Claims**



1. A guide for uncurling and aligning the edges of superposed layers of fabric adjacent the sewing axis and prior to entering the sewing zone of a sewing machine of the type having a presser foot and worksurface, said guide comprising:

(a) a supporting arm (**2**) mounted on the machine upstream of the sewing zone in spaced and parallel relation with the worksurface;

(b) a pair of plate elements (**8, 10**) assembled in spaced and vertical alignment in one end (**2'**) of said supporting arm including:

(i) an intermediate plate element (**9**) assembled between said plate elements (**8, 10**) defining passages (**11, 12**) therebetween;

(c) guide walls (**13, 14**) forming the inner surfaces of said passages (**11, 12**) for aligning and guiding the layers of fabric in the direction of the sewing axis;

(d) means (17, 18) operatively associated with each of said plate elements for engaging the curled edges of fabric upstream of the guide to effect a partial uncurling thereof; and

(e) means (15, 16) forming a part of the leading edge of each said plate elements for completing the uncurling of the fabric edges as they enter the passages of the guide.

4,315,472

ELECTRONIC SEWING MACHINE

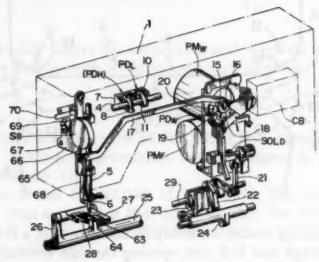
Hachiro Makabe, Fussa; Kazuo Watanabe, Hachioji; Hideaki Takenoya, Hachioji; Eiichi Shomura, Hachioji, and Yoshinobu Tonomura, Hachioji, all of Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

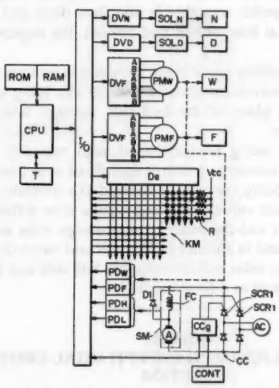
Filed Mar. 18, 1980, Ser. No. 131,357

Claims priority, application Japan, Mar. 26, 1979, 54-35213

Int. Cl.[3] D05B *3/02*

U.S. Cl. 112—158 E 4 Claims





1. An improvement to a sewing machine in which a pulse motor is subjected to a lesser load during straight stitching and to a greater load during a movement of a mechanism from an initial first mechanism position to a desired second mechanism position, comprising:

a first means connected to the mechanism and determining the first mechanism position;

a second means determining the second mechanism position in accordance with user requirements;

a third means connected to the first means and the second means and computing position difference information which is used to operate the pulse motor to allow the movement to take place; and

a motor control connected to the third means and to the pulse motor, the motor control regulating motor speed in accordance with the difference information.

4,315,473

MODULAR BENCH FOR SEWING MACHINE

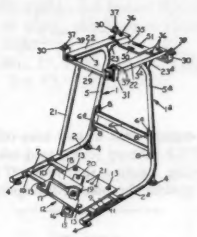
Giancarlo D. Torre, Biassono, Italy, assignor to Rockwell-Rimoldi, S.p.A., Milan, Italy

Filed Feb. 27, 1980, Ser. No. 125,310

Claims priority, application Italy, Apr. 2, 1979, 21481 A/79

Int. Cl.[3] A47B *29/00*

U.S. Cl. 112—217.1 11 Claims



1. A modular bench for supporting a sewing machine, its operating motor and a pedal control unit for effecting selective actuation of the operating motor, said modular bench comprising:

(a) a pair of spaced upright members (1, 1*a*) including:

(i) lower branches (2, 2*a*) defining a base; and

(ii) upper branches (3, 3*a*) extending parallel with and having a length less than said lower branches;

(b) cross pieces (6, 7) interconnecting said spaced uprigths (1, 1*a*);

(c) a longitudinal member (22) mounted on each said upper branches (3, 3*a*);

(d) a plate 32 fixed to and interconnecting said longitudinal members (22) for supporting the sewing machine;

(e) a bracket 35 fixed to and interconnecting said longitudinal members 22 for supporting the machine's operating motor;

(f) a first vibration dampening means operatively connected to said upper branches (3, 3*a*) for elastically isolating said plate 32 and bracket 35 from said upright members (1, 1*a*);

(g) support brackets (30, 31) attached to said vibration dampening means for supporting a working table (40) in operative association with the sewing machine;

(h) a second vibration dampening means interposed between said support brackets (30, 31) and working table (40) for elastically isolating the latter from the sewing machine and operating motor;

(i) a plate (11) mounted on said cross piece (7) for supporting the pedal control unit; and

(j) means for selectively locating the pedal control unit in any one of a plurality of predetermined positions on said plate 11.

4,315,474

THREAD TAKE-OFF DEVICE OF A SEWING MACHINE

Ernst Dreier, Steckborn, Switzerland, assignor to Fritz Gerauf Aktiengesellschaft Bernina-Nahmaschinenfabrik, Steckborn, Switzerland

Filed May 6, 1980, Ser. No. 147,164

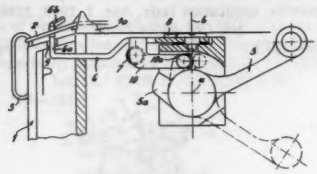
Claims priority, application Switzerland, May 23, 1979, 4831/79

Int. Cl.[3] D05B *49/00*

U.S. Cl. 112—242 8 Claims

1. In a sewing machine apparatus containing a needle thread reservoir, a thread tightener and a take-up lever, the improvement which comprises a thread take-off device disposed in the zone of the thread path between the needle thread reservoir and the thread tightener for taking off a slack amount of thread reserve from the needle thread reservoir, said thread take-off device being operatively connected to a spring bias means for

maintaining said take-off device in said thread path, said take-off device being pivotally mounted for movement against said bias, substantially perpendicularly to the thread path, and said take-up lever being rotatably mounted to the sewing machine



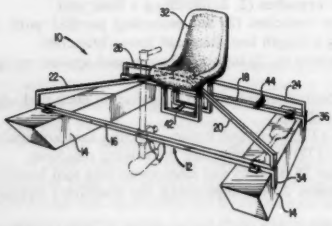
and adapted to engage said thread take-off device so that by the operation of the take-up lever, said take-up lever engages said take-off device, causing said take-off device to intersect the thread path against the bias of the spring bias means.

4,315,475

KNOCKDOWN CATAMARAN

John B. Echols, 725 N. Pearl St., Natchez, Miss. 39120

Filed Mar. 7, 1980, Ser. No. 128,198
Int. Cl.³ B63B *7/00*
U.S. Cl. 114—61 **6 Claims**



1. A knock-down watercraft assembly comprising:

a pair of elongate floats, each having a top area and a side area;

frame structure means for interconnecting said floats in laterally spaced relation substantially parallel to each other, said frame structure means including,

a pair of cross member struts, each having downwardly extending legs at opposite ends thereof,

attachment means for releasably connecting each cross member strut, in substantially parallel relationship to each other, to said elongate floats such that the pair of elongate floats and pair of cross member struts are in rectangular relationship and the area enclosed within the pair of cross member struts and pair of elongate floats is open, said attachment means comprising laterally extending channels mounted on the top area of the elongate floats, said channels receiving the cross member struts such that each cross member strut lies against the top area of the elongate float and each downwardly extending leg lies against the side area of the elongate float to prevent rotation of the elongate float with respect to the cross member strut, and connecting means for releasably connecting the channels with the cross member struts,

a plurality of diagonal risers, each diagonal riser comprising a strut having an upwardly extending end portion affixed to the cross member strut substantially adjacent to the laterally extending channel, and having a major portion extending from the end portion in a direction toward the center of the rectangle defined by the elongate floats and cross member struts and angled upward with respect to the cross member struts;

swivel seat mounting means interconnecting each diagonal riser substantially at the center of the rectangle defined by the elongate floats and cross member struts; and

a swivel seat rotatably mounted on said swivel seat mounting means, wherein the distance between the cross member struts and the height of the swivel seat above the cross member struts are such that one of said cross member struts provides a foot rest for an operator seated in said seat.

4,315,476

STEERING SYSTEM FOR A SHIP

Josephus A. M. van der Tak, 47 Wassenaarseweg, The Hague, Netherlands

Filed Oct. 14, 1980, Ser. No. 196,673
Int. Cl.³ B63H *25/46*
U.S. Cl. 114—151 **3 Claims**

1. In a steering system for a ship including a hull, a flow duct formed through said hull and opening through the side of the hull in a longitudinally elongated duct nozzle at each end of the flow duct, a propeller rotatable in said flow duct, and a flow shifting valve in at least one of said nozzles, the improvement comprising:

(a) said flow shifting valve being mounted in said one nozzle for pivotal movement about a vertical axis lying substantially in the plane of the hull side through which said nozzle opens;

(b) said valve being wedge-shaped with opposite wedge sides which converge towards said pivot axis; and

(c) said valve being movable about said axis whereby in one position of said valve one of said wedge sides is flush with said hull side and the other of said wedge sides acts as a flow guide, and in another position of said valve the other of said wedge sides is flush with said hull side and the one wedge side acts as a flow guide.

4,315,477

SEMI-OPEN LIQUID PHASE EPITAXIAL GROWTH SYSTEM

Cheng-Chi Wang, Thousand Oaks, and August H. B. Vanderwyck, Newbury Park, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 132,756, Mar. 24, 1980, Pat. No. 4,263,065.
This application Dec. 9, 1980, Ser. No. 214,548
Int. Cl.³ H01L *7/00*
U.S. Cl. 118—64 **5 Claims**

1. An apparatus for growing an epitaxial layer on a substrate, comprising:

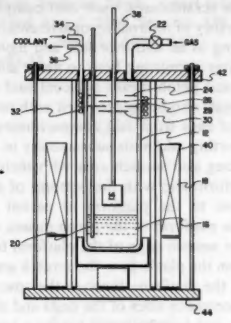
a sealable container for receiving said substrate and a growth solution;

a controllable source of heat for adjusting the temperature of said growth solution;

a controllable souce of pressure communicating with said container to reduce the vaporization of components dissolved in said solution;

a cooling zone within said container for condensing components vaporized from said solution, said cooling zone including a quantity of quartz wool positioned in said

container above said growth solution and a conduit positioned near to said quantity of quartz wool for receiving a cooling fluid; and



a movable fixture for supporting said substrate and contacting said growth solution with said substrate.

4,315,478

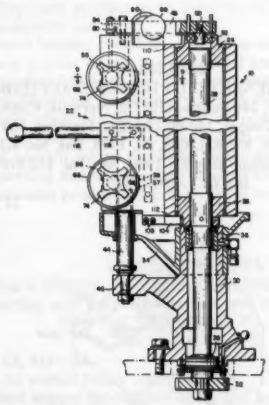
DOCTOR BLADE FOR LABELING MACHINE

Sidney T. Carter, Shrewsbury, Mass., assignor to A-T-O Inc., Willoughby, Ohio

Division of Ser. No. 42,040, May 24, 1979, Pat. No. 4,226,660. This application Feb. 13, 1980, Ser. No. 121,017

Int. Cl.³ B05C *1/02*

U.S. Cl. 118—262 **5 Claims**



1. In a labeling machine, a glue-applying assembly comprising a glue-applying roll, means supporting the glue-applying roll at its ends for rotation about a predetermined axis, a doctor blade and means supporting the doctor blade adjacent the surface of the glue-applying roll with its edge adjacent the peripheral surface of the glue-applying roll for adjustment of the blade into parallel relation with the surface of the glue-applying roll and for adjustment of the proximity of the edge of the blade relative to the surface of the glue-applying roll comprising a spindle, means supporting the spindle in spaced, parallel relation to the axis of the glue-applying roll, a pair of blocks rotatably mounted on the spindle in axially-spaced relation thereon, a pair of eccentric means mounting the blade to the blocks, said eccentric means enabling adjusting the blade on the spindle to a position wherein the edge of the doctor is precisely parallel to the surface of the glue-applying roll, a cylinder bolted to the support for the spindle containing a piston and a rod protruding from the cylinder, spring means on the spindle biasing the doctor in a direction to have engagement with the protruding end of the piston rod and wherein the spring means biases the doctor away from the surface of the glue-applying roll and the piston moves the doctor toward the surface of the glue-applying roll.

4,315,479

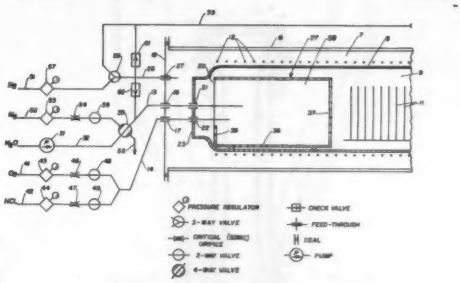
SILICON WAFER STEAM OXIDIZING APPARATUS

Monte M. Toole, Mill Valley, and Robert B. Champagne, Mountain View, both of Calif., assignors to Atomel Corporation, Mountain View, Calif.

Filed Jun. 27, 1980, Ser. No. 126,721

Int. Cl.³ H01L *21/316*

U.S. Cl. 118—726 **3 Claims**



1. In a high-pressure, high-temperature gaseous chemical apparatus having a housing providing a pressure chamber and a vessel mounted therein and providing a reaction chamber dimensioned for receipt of semiconductor wafers and first means for heating said reaction chamber, for introducing therein chemically active gas under pressure, for introducing an inert gas under pressure in said pressure chamber external of said vessel for equalizing the pressures in said chambers, and for discharging said active gas from said reaction chamber in a continuous flow operation, the improvement comprising:

second means in said reaction chamber providing a water boiling enclosure having a water vapor discharge opening communicating with the interior of said reaction chamber and being constructed to confine liquid water therein while permitting water vapor escape through said opening; and

third means for introducing water under pressure into said enclosure;

said second means being formed for discharging water vapor to said reaction chamber in a continuous flow operation.

4,315,480

TEAT CUPS FOR MILKING MACHINES

Daniel O. Noorlander, 508 W. 630 North, Orem, Utah 84057

Filed Jun. 30, 1980, Ser. No. 164,164

Int. Cl.³ A01J *5/04*

U.S. Cl. 119—14.49 **13 Claims**

1. A teat cup assembly for automatic milking machines which employ a milk line operating at substantially constant vacuum and a source of pulsating vacuum, said teat cup assembly comprising:

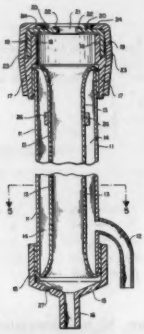
a rigid, tubular, outer shell having a port therein adapted to be connected to the source of pulsating vacuum;

an elongate, tubular inflation member made of a resilient, flexible, elastomeric material, said inflation being adapted to be received longitudinally within said outer shell, with the inflation being of sufficient length to extend beyond the ends of said outer shell and with the opposite end portions of said inflation being expanded and turned back over the respective ends of said outer shell, whereby a

pulsating vacuum chamber is defined between said inflation and said shell;

a lower cap member adapted to fit securely over the lower portion of said inflation which is turned back over the lower end of said outer shell, whereby the lower portion of said inflation is sealed tightly between the cap member and the outer shell, said cap member having a nipple extending therefrom which is adapted to be connected to said milk line which operates at substantially constant vacuum;

a substantially cylindrical sleeve member adapted to fit securely over the upper portion of said inflation which is turned back over the upper end of said outer shell, whereby the upper portion of said inflation is sealed tightly between the sleeve member and the outer shell;



a cup-like, teat entrance member made of a resilient, flexible elastomeric material, said cup-like teat entrance member comprising a substantially cylindrical side section and a diaphragm having a central opening therein molded integrally to one end of said cylindrical side section, said cylindrical side section of said teat entrance member being adapted to fit over at least the upper portion of said sleeve member so that when the teat entrance member is positioned on said sleeve member said diaphragm extends across the open end of said sleeve member and the opening in said diaphragm is located substantially coaxial with the longitudinal axis of said inflation member; and

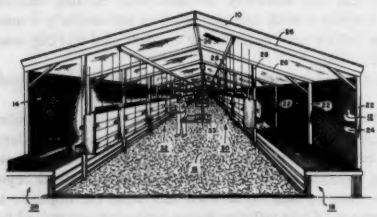
a substantially cylindrical, upper cap member which is adapted to slide substantially tightly over the teat entrance member and sleeve member to securely hold the teat entrance member in place and to provide protection for the elastomeric teat entrance member.

4,315,481

BREEDER HOUSE SYSTEM

Larry R. Coile, Rte. 1, Box 295c, and Bob F. Coile, Rte. 1, Box 291, both of Comer, Ga. 30629

Filed Nov. 13, 1980, Ser. No. 206,365
Int. Cl.³ A01K *31/00*
U.S. Cl. 119—21 **6 Claims**



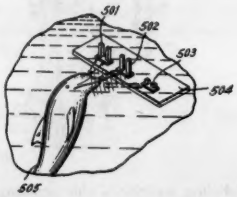
4. A breeder house for chickens comprising an elongated enclosure having a scratch area extending in the lengthwise direction, a raised platform extending along at least one side of the scratch area, and an array of nests also arranged along the same side of the scratch area, each nest comprising an enclosure with a plurality of internal compartments, one side of said enclosure serving as an entrance side and having an array of entrance openings permitting hens to enter and exit from the compartments and perch means adjacent said entrance openings, and said nests also being provided with means permitting the collection of eggs from said compartments, characterized by means supporting said nests substantially in alignment with one another along said scratch area with their entrance sides facing said platform and with the bottoms of said nests being sufficiently close to the platform to permit hens to move readily from the platform to the perch means, yet sufficiently spaced from the nearest edge of the platform to permit chickens to move from the platform to the scratch area and from the scratch area to the platform, through the spaces between the bottoms of the entrance sides of the nests and the nearest edge of the platform, said breeder house having a row of stanchions arranged along said nearest edge of the platform and extending upwardly from the floor of the breeder house, and having bracket means comprising a plurality of brackets, one bracket being secured to each stanchion and extending laterally therefrom toward the scratch area, the bracket means on said stanchions providing vertical support for said array of nests, and in which said array of nests rests on said bracket means, and having hoist means for simultaneously raising nests upwardly from a plurality of said brackets.

4,315,482

THREE-DIMENSIONAL PHONETIC ALPHABET

Stephen R. Cooper, 246 Sunrise Hill Ct., Norwalk, Conn. 06851, and Charles H. Cooper, 144-60 25th Dr., Flushing, N.Y. 11354

Division of Ser. No. 955,621, Oct. 30, 1978, Pat. No. 4,245,587.
This application May 22, 1980, Ser. No. 152,518
Int. Cl.³ A01K *15/02*
U.S. Cl. 119—29 **31 Claims**



1. A set of alphabet symbols for communicating with aquatic mammals, each symbol comprising at least one three-dimensional object chosen from the group consisting of a right circular cylinder, a rectangular solid having flat faces, a rectangular solid having concave faces and a hyperboloidal solid, each object having an acoustically distinct echolocation image for detection of the objects and discrimination among the objects by said aquatic mammals, said symbols being adapted to be arranged in sequences such that said aquatic mammals can be trained to identify such sequences as symbolizing a plurality of respective concepts, each symbol also representing a human language phoentic value comprised of at least one speech sound, such that human individuals can identify such sequences as symbolizing a plurality of respective human-language words.

4,315,483

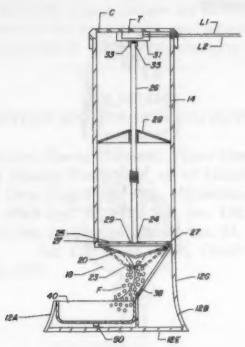
ANIMAL FEEDER

Raymond T. Scheidler, Saginaw, Mich., assignor to Ronald Frederick Park, Saginaw, Mich., a part interest

Filed Apr. 7, 1980, Ser. No. 138,204

Int. Cl.³ A01K *7/00*

U.S. Cl. 119—51.11 **14 Claims**



1. An animal feeder comprising:

storage means for storing consumable product such as animal food;

selectively enableable and disableable food dispensing means for dispensing said consumable product from said storage means;

feed trough means for receiving a predetermined amount of dispensed product to be removed by an animal for consumption; and

control means, operable at predetermined intervals when any portion of said predetermined amount of consumable product has been removed from said trough means, for enabling said dispensing means to dispense product until said predetermined amount of consumable product is again received by said feed trough means;

said control means including means for disabling said dispensing means when said predetermined amount of consumable product is again received by said trough means.

4,315,484

ANIMAL FEEDER

Charles A. Kingery, Washington Court House, Ohio, assignor to Marting Mfg. Inc., Washington Court House, Ohio

Filed Jun. 16, 1980, Ser. No. 159,692

Int. Cl.³ A01K *5/00*

U.S. Cl. 119—53 **3 Claims**

1. An animal feeder comprising,

a feed hopper having side walls, end walls, a bottom assembly, and an open top,

a movable closure operable to close said open top of said feed hopper,

metering means positioned to extend below the lower edge of at least one of said side walls,

said bottom assembly including a feed trough under said metering means and in communication with said feed hopper,

said metering means including a slide plate housing, a slide plate, and an agitator plate,

said housing being mounted upon said one side wall,

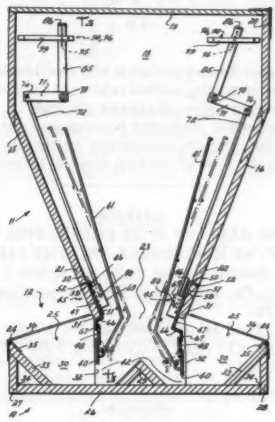
an enclosure defined between said one side wall and said housing,

said slide plate having an upper end extending into said enclosure and a lower end extending below said housing,

said agitator plate being pivotally suspended from said slide plate,

a wire grid attached to the agitator plate so as to be movable with the agitator plate, said wire grid being located on the inward side of the agitator plate and extending into the feed hopper such that movement of said agitator plate and attached wire grid prevents compacting of feed in the bottom of said hopper,

adjustment means for effecting vertical adjustment of said slide plate relative to said housing, said adjustment means including an upwardly extending rod connected at its lower end to said slide plate and at its upper end to one end of a crank arm, said crank arm being rotatable about a transverse shaft extending between said end walls of said feed hopper, and handle means accessible through the



open top of said feed hopper for effecting oscillatory movement of said crank arm about said transverse shaft to cause vertical adjustment of said side plate and of the depending agitator plate, and

locking means for locking said handle means in any of a plurality of different angular positions of adjustment, said locking means comprising a locking bar fixed to the inside surface of one end wall of said hopper, said locking bar having a plurality of recesses located on the inside edge thereof into which a side edge portion of said handle means is movable to secure said handle means against inadvertent movement.

4,315,485

VAPOR GENERATOR FOR FUELS HAVING DIFFERENT FLAME RADIATION INTENSITIES

Tomotsuchi Kawamura, Chiba, and Hisao Haneda, Yokohama, both of Japan, assignors to Sulzer Brothers Limited, Winterthur, Switzerland and Mitsubishi Heavy Industries Ltd., Tokyo, Japan

Filed Aug. 20, 1980, Ser. No. 179,790

Claims priority, application Switzerland, Aug. 22, 1980, 7648/79

Int. Cl.³ F22D *7/00*

U.S. Cl. 122—406 R **8 Claims**

1. A vapor generator comprising

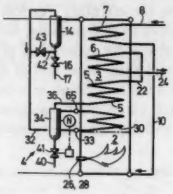
an evaporator heating surface for a working medium defining a combustion chamber and an exhaust gas flue above said combustion chamber;

at least one burner in said combustion chamber for burning a high flame radiation fuel to produce a flame and a flow of exhaust gas;

at least one burner in said combustion chamber for burning a low flame radiation fuel to produce a flame and a flow of exhaust gas, said burners being disposed at a common level in said combustion chamber;

a plurality of tubes defining a convection heating surface for

the working medium within said exhaust gas flue and above said combustion chamber for passage of a flow of an exhaust gas thereover in heat exchange relation with the working medium therein;



a superheater heating surface in said flue downstream of said convection heating surface relative to the flow of working medium and a flow of exhaust gas; and

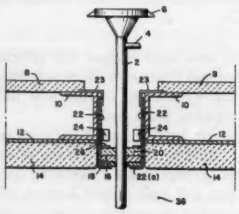
a water separator connected between said convection heating surface and said superheater heating surface for conducting the flow of working medium therebetween.

4,315,486

FLOATING RADIANT TUBE SHEETS FOR VERTICAL TUBE REFORMERS AND THE LIKE

Howard H. Seeman, Seaford, N.Y., and Robert F. Kaupp, Willow Grove, Pa., assignors to Selas Corporation of America, Dresher, Pa.

Filed Jul. 30, 1980, Ser. No. 173,834
Int. Cl.³ F22B *37/24, 17/02;* F28F *7/00*
U.S. Cl. 122—510 **17 Claims**



1. Furnace apparatus for heating portions of a plurality of individual vertically extending tubes, while permitting vertical expansion and contraction of all said tubes, including any such tubes which become significantly bowed or bent, and preventing significant strain to be placed on said bowed or bent tubes, comprising, in combination, an enclosed fire box having a roof, a plurality of vertically extending tubes being disposed in said fire box, with the upper ends of said tubes extending through said roof, a plurality of openings being formed in said roof to permit extension of the top of said tubes therethrough, floatable fire box cover means surrounding said tubes proximate said openings and permitting vertical expansion and contraction of said tubes, said floatable fire box cover means being floatable vertically upwardly and downwardly through a limited distance, to compensate for upward and downward movement of bowed or bent tubes.

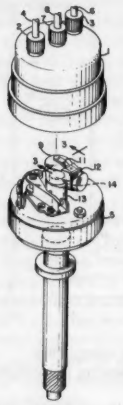
4,315,487

METHOD AND APPARATUS FOR MODIFYING THE IGNITION SYSTEM OF MULTI-CYLINDER ENGINES

James W. Wyatt, Sr., 916 Walker St., Wenatchee, Wash. 98801, and James D. McEntire, 9025 11th SW., Seattle, Wash. 98106

Filed Oct. 17, 1979, Ser. No. 85,502
Int. Cl.³ F02P *7/02*
U.S. Cl. 123—146.5 A **9 Claims**

1. In an ignition system for a multi-cylinder engine having a plurality of cylinders with associated spark plugs and at least power and exhaust strokes associated with each cylinder, a single ignition coil and a circuit breaker block with a pair of points which open and close on rotation of a cam driven by a crankshaft of the engine, causing each spark plug to fire immediately before the power stroke and during the exhaust stroke of its associated cylinder, the improvement comprising means for converting said ignition system to a distributed spark ignition system including:



a distributor cap overlying the circuit breaker block with a plurality of electrical contacts attached to the coil and spark plugs, and

a rotor within said distributor cap for distributing electricity between the contacts of said distributor cap in timed sequence, and

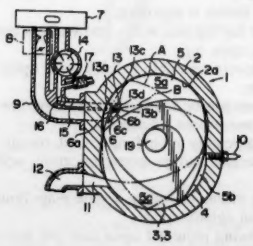
adapter means for adapting said cam for attachment to said rotor, whereby each spark plug will be fired immediately prior to the power stroke of its associated cylinder only.

4,315,488

ROTARY PISTON ENGINE HAVING SUPERCHARGING MEANS

Tomoo Tadokoro, and Haruo Okimoto, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Nov. 8, 1979, Ser. No. 92,289
Claims priority, application Japan, Nov. 13, 1978, 53-139981; Nov. 13, 1978, 53-139982; Nov. 13, 1978, 53-139983
Int. Cl.³ F02B *53/06, 53/08*
U.S. Cl. 123—213 **9 Claims**



1. Rotary piston engine comprising a casing which includes a rotor housing having an inner wall of trochoidal configuration and a pair of side housings secured to the opposite sides of the rotor housing to define a rotor cavity of trochoidal configuration in the casing, a rotor of polygonal configuration disposed in said rotor cavity for rotation with apex portions in

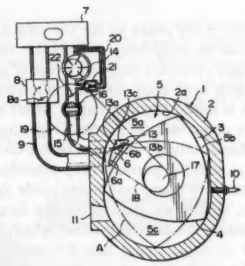
sliding engagement with the inner wall of the rotor housing to define working chambers of which volumes are cyclically changed upon rotation of the rotor, an intake system including main intake port means formed in at least one of said side housings and supercharging port means formed in at least one of said side housings, said main and supercharging port means being so formed that they are opened substantially simultaneously and the supercharging port means is closed later than the main intake port means, means for providing a supply of air-fuel mixture to the main intake port means, and means for positively supplying air to the supercharging port means.

4,315,489

ROTARY PISTON ENGINE HAVING SUPERCHARGING MEANS

Tomoo Tadokoro; Haruo Okimoto; Yasuo Honda; Hiroshi Nomura, and Masato Yoshimura, all of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Apr. 10, 1980, Ser. No. 138,892
Claims priority, application Japan, Apr. 12, 1979, 54-45087
Int. Cl.³ F02B *53/06, 53/08*
U.S. Cl. 123—213 **8 Claims**



1. Rotary piston engine comprising a casing which includes a rotor housing having an inner wall of trochoidal configuration and a pair of side housings secured to the opposite sides of the rotor housing to define a rotor cavity of trochoidal configuration in the casing, a rotor of polygonal configuration disposed in said rotor cavity for rotation with apex portions in sliding engagement with the inner wall of the rotor housing to define working chambers of which volumes are cyclically changed upon rotation of the rotor, an intake system including main intake port means and supercharging port means formed in said casing so that the supercharging port means is closed later than the main intake port means, means for providing a supply of intake gas to the main intake port means, and means for positively supplying supercharging gas to the supercharging port means, timing valve means associated with said supercharging port means and adapted to be opened at an end period of intake stroke under a low speed engine operation, valve timing control means responsive to engine speed for advancing open timing of the timing valve means in response to an increase in the engine speed.

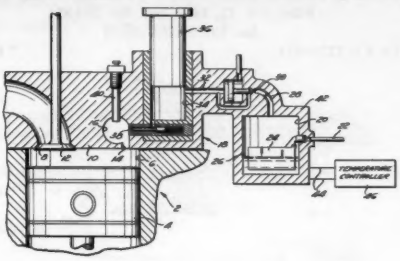
4,315,490

PREVAPORIZING DIESEL INJECTOR

William T. Webber, Agoura, and Leon Stabinsky, Chatsworth, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 30, 1980, Ser. No. 164,751
Int. Cl.³ F02B *19/14*
U.S. Cl. 123—275 **5 Claims**

1. A diesel engine comprising:
an engine cylinder;
a piston movable within said engine cylinder;
a precombustion chamber communicating with said engine cylinder;
fuel injector means delivering vaporized fuel into said precombustion chamber in a predetermined manner;
a fuel vaporizing chamber;



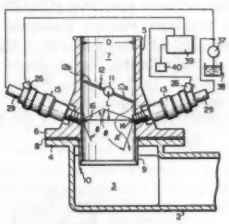
liquid supply means for delivering liquid fuel into said fuel vaporizing chamber from a suitable source; and
vapor delivery means for delivering vaporized fuel from said fuel vaporizing chamber to said fuel injector means.

4,315,491

FUEL INJECTION TYPE INTERNAL COMBUSTION ENGINE

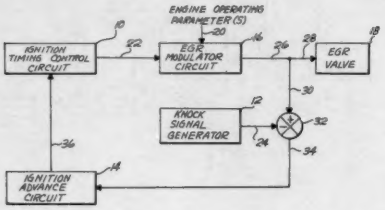
Keiso Takeda, Susono, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Aug. 10, 1979, Ser. No. 65,563
Claims priority, application Japan, Jan. 23, 1979, 54/5535
Int. Cl.³ F02M *51/00*
U.S. Cl. 123—478 **17 Claims**



1. A fuel injection type of internal combustion engine having an engine body;
an intake duct fixed onto said engine body and defining an intake passage therein;
a throttle valve arranged in said intake passage;
a first fuel injector having a fuel nozzle arranged in said intake passage;
a second fuel injector having a fuel nozzle arranged in said intake passage; and
injection control means for controlling the injecting operation of said first and second fuel injectors, wherein the improvement comprises:
said injection control means being arranged to control said first fuel injector so as to deliver fuel intermittently at a uniform cyclic rate, with each period of intermittent injection not exceeding about 20 m sec, to maintain a fixed predetermined amount of fuel injected from said first fuel injector under all steady state operating conditions of the warmed-up engine, and to control said second fuel injector so as to vary the amount of fuel injected from said second fuel injector as a direct function of the amount of intake air flow.

4,315,492
EGR VALVE CONTROL SIGNAL PROCESSING FOR INTERNAL COMBUSTION ENGINE
Conrad O. Gardner, 22905 108th W., Edmonds, Wash. 98020
Filed Jun. 12, 1980, Ser. No. 158,811
Int. Cl.[3] F02M 25/06
U.S. Cl. 123—571 7 Claims



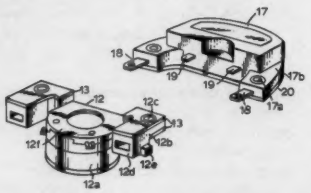
4. An EGR/ignition timing control system for an internal combustion engine having an ignition control system and an EGR modulator circuit for generating an EGR valve control signal, said EGR/ignition timing control system further comprising in combination:

means for providing a signal representative of an engine combustion condition;

circuit means responsive to said EGR valve control signal and said signal representative of an engine combustion condition for providing a further signal; and,

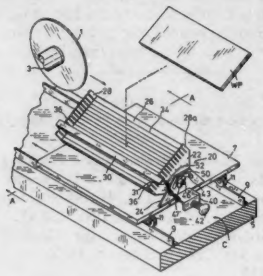
means responsive to said further signal for controlling ignition timing of said ignition timing control system.

4,315,493
INTERNAL COMBUSTION ENGINE IGNITION DEVICE
Masayoshi Onishi; Yoshikatu Haruta; Toshiyuki Sakurai, and Shigemi Yamamoto, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 9, 1979, Ser. No. 92,753
Claims priority, application Japan, Nov. 16, 1978, 53/142074; Nov. 16, 1978, 53/158451[U]; Nov. 16, 1978, 53/158452[U]
Int. Cl.[3] F02P 1/00
U.S. Cl. 123—617 12 Claims



1. An ignition device for an internal combustion engine, comprising: a housing; a rotary shaft journalled in said housing; a signal unit mounted in a predetermined position within said housing and having a signal coil for generating ignition signals due to the rotation of said rotary shaft; and an ignition unit adjacent to said signal unit within said housing laterally thereof with respect to the axis of said shaft, said ignition unit including a semiconductor amplifier circuit for receiving said ignition signals and for controlling a current flowing through an ignition coil, said signal unit having a portion laterally opposed to said ignition unit and having a pair of output terminals, and said ignition unit having a portion laterally opposed to said signal unit and having a pair of input terminals mechanically and electrically connected to said output terminals for mechanically and electrically connecting said units.

4,315,494
MASONARY SAW JIG
Michele DiPlacido, 141 Taysham Crescent, Toronto, Ontario, Canada
Filed Apr. 21, 1980, Ser. No. 142,261
Int. Cl.[3] B28D 7/04
U.S. Cl. 125—35 3 Claims



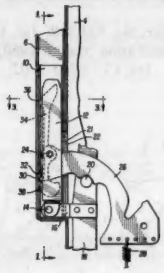
1. A portable mitre guide jig for use with a masonary saw, said mitre guide jig comprising a triangular body portion having a work piece receiving face and a pair of symmetrical side faces converging to an apex, and an end portion to which said body portion is adjustably secured to adjust said work piece receiving face about said apex from a right hand cutting position to a left hand cutting position to enable cutting from either side of the saw, said end portion being provided with clamping means to removably clamp said mitre guide jig to a masonary saw platform, said work piece receiving face being flat and being bordered by at least one end rail which is raised relative to said work piece receiving face for preventing horizontal movement of a work piece placed thereon against said at least one side rail, an adjustable support bar for supporting the work piece on said work piece receiving face and means for locating said support bar at a plurality of different supporting positions on said work piece receiving face, said side faces providing an adjustment stop to prevent over adjustment of said work piece receiving face with respect to the saw and said body portion being provided with a plurality of spaced notches for receiving said support bar at said plurality of different supporting positions in said notches.

4,315,495
STABILIZER FOR HINGE OF REMOVABLE OVEN DOOR
David A. Jellies, Cleveland, Tenn., assignor to Magic Chef, Inc., Cleveland, Tenn.
Filed Nov. 3, 1980, Ser. No. 203,503
Int. Cl.[3] F23M 7/00
U.S. Cl. 126—194 3 Claims

1. In stabilizing means for the hinge of a removable oven door wherein the oven door is provided with a pocket to removably receive an elongated hollow hinge element pivoted to a range, the improvement comprising:

a resilient stabilizer member mounted in said hollow hinge element and having spaced ends projecting from one side thereof sufficiently to engage an inner surface of said pocket when said element is inserted therein and flex said ends inwardly whereby to eliminate any looseness between said element and pocket, said resilient stabilizer

being pivotally mounted in said hollow hinge element on a pivot axis intermediate said ends to permit limited pivotal movement of said ends inwardly and outwardly of said element.

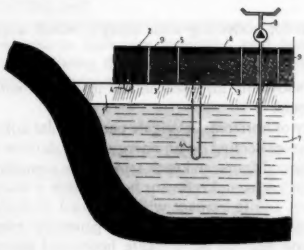


4,315,496

APPARATUS FOR STORAGE AND RECOVERY OF LOW TEMPERATURE THERMAL ENERGY

Anders D. Backlund, Holmen, S-820 90 Ytterhogdal, Sweden

Filed May 9, 1979, Ser. No. 37,251
Claims priority, application Sweden, May 12, 1978, 7805459
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—415 **7 Claims**



1. An apparatus for storing and recovering low temperature thermal energy from a mass which is at least sufficiently water saturated that a layer of ice forms thereover in cold ambient temperatures, comprising:

a continuous bed of heat insulating material covering the mass, adapted to rest on the layer of ice, and adapted to float on water in the absence of ice;

a conduit system disposed on the underside of, and carried by the bed, the conduit system being in heat exchanging relationship with at least one of the water and the layer of ice;

a heat carrying medium flowing in the conduit system for extracting low temperature thermal energy directly from the mass, inducing an accelerated production of ice in cold ambient temperatures, the conduit system having an intake and outlet for routing the medium from and to an area to be heated, the apparatus being capable of cooling the area in warm ambient temperatures;

a layer of solar radiation absorbing materials overlaying the bed of insulating material, both materials having vertical passages therethrough; and,

means for drawing cold water from beneath the bed and the layer of ice and spraying the water over the layer of solar radiation absorbing material, the sprayed water being heated before it percolates down through the passages in the bed, further heating the mass;

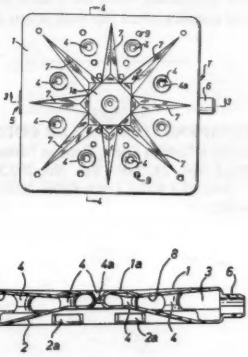
whereby low temperature energy for heating the area may be extracted from the mass even at sub-freezing ambient temperatures by the accelerated production of ice, and whereby the accelerated production of ice due to the extraction of low temperature energy for heating the area facilitates subsequent use of the mass for cooling the area in warmer temperatures.

4,315,497

HOLLOW HEAT EXCHANGER TILE

Lewis Vardey, 33, Lower Rd., Leatherhead, Surrey, England

Filed Sep. 9, 1980, Ser. No. 185,607
Claims priority, application United Kingdom, Sep. 14, 1979, 31992/79
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—416 **11 Claims**



1. A hollow heat exchanger tile means for solar heating a swimming pool made of synthetic plastics material having a liquid inlet and a liquid outlet at peripherally spaced edge parts of a chamber having a floor which rises towards the centre of the tile and is shaped to promote liquid flow in a curved path between the inlet and the outlet, characterised in that the radially inward part of the chamber has at least one flared-ended hollow column extending between the top and bottom faces of the tile and that one or other of the inlet or the outlet is formed by a tubular projection from the edge of the tile.

4,315,498

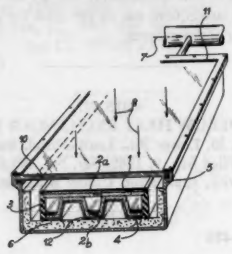
SOLAR COLLECTOR

Bernard Devin, Gif-sur-Yvette; Jean-Paul Durand, Fontaine par Chateau Landon, and Michel Guillemot, Talant, all of France, assignors to Commissariat a l'Energie Atomique, France

Filed Apr. 10, 1980, Ser. No. 139,138
Claims priority, application France, Apr. 13, 1979, 79 09409
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—422 **7 Claims**

1. A solar collector of the heat pipe type, comprising in per se known manner a container containing a heat pipe absorber of the solar energy, insulation placed between the absorber and the bottom of the container, at least one glass partition on the container, as well as the devices necessary for assembling and sealing the system, said heat pipe absorber being constituted by a tightly sealed case formed by a first heat collecting wall, a second wall forming the base, and side walls, a capillary system lining the inside of the case and a heat transfer fluid which wets this capillary system, wherein the capillary system comprises a first part applied to the first wall and a second part applied to the second wall and wherein at least one of the said first and

second walls is deformable under the action of an overpressure in the case, said first and second parts of the capillary system



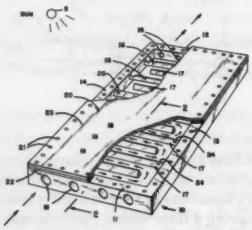
having no point of contact when the wall is deformed and at least one line of contact when the wall is not deformed.

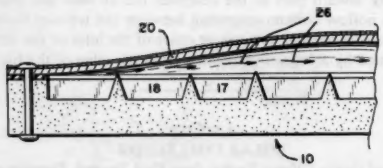
4,315,499

SELF-COMPENSATING SOLAR COLLECTOR

David E. Shonerd, 6 Golden State, Rancho Mirage, Calif. 92270

Filed Nov. 24, 1980, Ser. No. 209,336
Int. Cl.[3] F24J 3/02; F28F 7/00
U.S. Cl. 126—422 5 Claims





1. A self-compensating solar collector including, in combination:

(a) a collector tray having an inlet and outlet;

(b) means in said tray defining a mass fluid flow labyrinth channel between said inlet and outlet; and

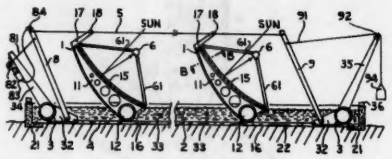
(c) a thermally responsive diaphragm-absorber plate covering said collector tray and movable from a first position confining mass fluid flow to said labyrinth channel, to a second upwardly deflected position in response to heating of the diaphragm to an elevated temperature to free the mass fluid flow from the labyrinth channel to thereby provide an expanded fluid flow path whereby during both cooling and heating, automatic compensation in the mass flow rate of the fluid through the collector with changes in temperature takes place to maintain the collector relatively cool and thereby increase the efficiency of the collector.

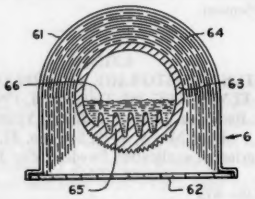
4,315,500

COLLECTION OF SOLAR ENERGY

Warren W. Gonder, 440 Horseshoe Dr., Grants Pass, Oreg. 97526

Continuation of Ser. No. 924,210, Jul. 12, 1978, Pat. No. 4,214,572. This application May 2, 1980, Ser. No. 145,967
Int. Cl.[3] F24J 3/02
U.S. Cl. 126—425 7 Claims





1. Apparatus for collecting solar energy, which apparatus comprises

(a) a pool of liquid;

(b) a frame buoyantly disposed on and in contact with said pool of liquid;

(c) a plurality of horizontal elongate parallel solar collection devices for collecting solar energy, said devices being attached to said frame and each said device comprising (i) an elongate horizontal reflector body which is buoyantly disposed on and in contact with said pool of liquid and which has a reflecting surface of generally parabolic cross-section and (ii) an elongate horizontal absorption device at the focal point of said parabolic reflecting surface wherein said absorption device comprises an outer elongate generally tubular member and an inner elongate generally tubular member which is within said outer member and is separated therefrom by a gas at subatmospheric pressure; wherein said outer member comprises at least one transparent longitudinally extending portion through which solar rays reflected by said reflector can enter to impinge upon said inner member and wherein said absorption device also comprises at least one longitudinally extending reflecting surface which substantially reduces re-radiation in the form of thermal energy of rays which have been absorbed by said inner member;

(d) azimuthal rotation means for rotating said frame to place said solar collection devices in a desired position relative to the sun; and

(e) elevational rotation means for rotating each said horizontal reflector body about its longitudinal axis to place said collection devices in a desired position relative to the sun.

4,315,501

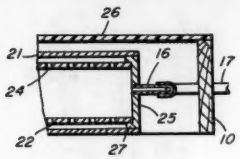
SOLAR HOT WATER UNIT AND SYSTEM

Raymond L. Ward, 2 Monadnock Rd., Worcester, Mass. 01609

Filed May 9, 1980, Ser. No. 148,405
Int. Cl.[3] F24J 3/02
U.S. Cl. 126—449 4 Claims

1. An economically useful solar hot water heating unit comprising

at least one relatively large pipe assembly positioned at the roof of a building for which hot water is to be provided,
support members supporting said pipe assembly in position,
a frame surrounding said pipe assembly and including the adjacent portion of the roof and a cover member mounted to enclose said pipe assembly and to insulate said assembly from the surrounding atmosphere,
each pipe assembly comprising an outer, pressure-sustaining tube and an inner perforated spiral tubing formed of sheet material in spiral configuration and having spiral agitating means comprising spiral-formed irregularities on the wall of said spiral tubing being adapted to mix water flowing therethrough by said spiral agitating means, said mixture

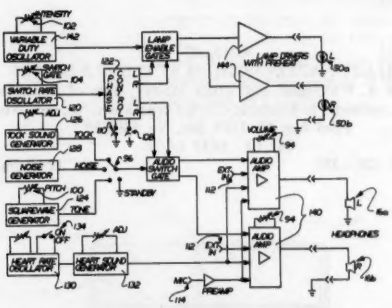


being accomplished by interaction between the flow of water and said spiral agitating means,
end caps mechanically fitted to said outer pressure sustaining tubes and means associated with said end caps for sealing said assembly and for supporting said spural tubing within said outer tubes,
inlet conduit means from the water supply for said building to said pipe assembly to the hot water usage system of said building, and
a light transmitting member positioned to transmit light from the sun to each pipe assembly, said light transmitting member being the upper one of said portion of the roof and said cover member.

4,315,502
LEARNING-RELAXATION DEVICE

Denis E. Gorges, 4392 State Rd., Cleveland, Ohio 44109

Filed Oct. 11, 1979, Ser. No. 84,051
Int. Cl.³ A61N 1/34
U.S. Cl. 128—1 C 23 Claims

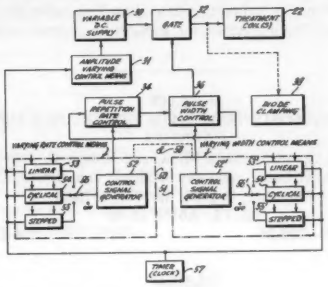


1. A learning-relaxation device for stimulating the central nervous system and the brain waves of a human subject having left and right eyes and left and right ears comprising:
light means providing pulsating light signals individually to the left and right eyes of the subject and for limiting at least peripheral vision in the left and right eyes,
sound means operable independently of said light means and providing at least one pulsating sound signal individually to the left and right ears of the subject while blocking ambient sound to both left and right ears, and
control means for individually varying frequency and intensity of each of said pulsating signals and phase of one of said signals relative to the other of said signals.

4,315,503
MODIFICATION OF THE GROWTH, REPAIR AND MAINTENANCE BEHAVIOR OF LIVING TISSUES AND CELLS BY A SPECIFIC AND SELECTIVE CHANGE IN ELECTRICAL ENVIRONMENT

John P. Ryaby, Essex Fells, and Arthur A. Pilla, Wyckoff, both of N.J., assignors to Electro-Biology, Inc., Fairfield, N.J.

Continuation of Ser. No. 927,758, Jul. 25, 1978, abandoned, which is a continuation-in-part of Ser. No. 742,706, Nov. 17, 1976, Pat. No. 4,105,017, which is a continuation-in-part of Ser. No. 633,408, Nov. 19, 1975, abandoned. This application Dec. 5, 1979, Ser. No. 100,291
Int. Cl.³ A61N 1/40
U.S. Cl. 128—1.5 28 Claims



1. An electromagnetic body-treatment device for surgically non-invasive modification of the growth, repair and maintenance behavior of living tissues and cells by a specific and selective change in electrical environment, comprising electromagnetic means including a portion adapted for positioning alongside an afflicted body region to be treated, said electromagnetic means including electrical-coil means for establishing via said portion a flux path through the body region, means for electrically exciting said coil means with a succession of low-voltage unidirectional asymmetrical pulses, said pulses having a minimum width characteristic of at least 100 microseconds and a minimum pulse-repetition-rate characteristic of at least one per second and a minimum low-voltage characteristic of at least 0.00001 volt per centimeter of treated tissue and/or cells corresponding to about 0.01 microampere per square centimeter of treated tissue and/or cells, and function-varying means operatively associated with said electrical-excitation means for varying at least one of said characteristics in the course of a body treatment and within a range of variation extending above the stated minimum value thereof.

4,315,504
ELBOW SUSPENSION DEVICE

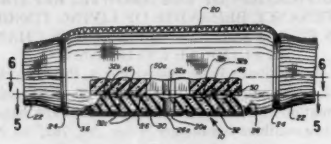
Dennis B. Drennan, Evanston; Donald J. Maylahn, Skokie, and Thomas R. Schleicher, Wilmette, all of Ill., assignors to DM Systems, Inc., Evanston, Ill.

Filed Jan. 26, 1981, Ser. No. 228,102
Int. Cl.³ A61B 19/00
U.S. Cl. 128—149 22 Claims

1. A suspension device for protection of the elbow against contact with bed sheets and other objects, comprising:
a tubular sleeve of flexible material adapted to be slipped onto the arm and having a base portion adapted to be positioned in overlaying relation with respect to the bony protuberance of the elbow;
a first support pad in said sleeve mounted on said base portion and formed of resilient cellular foam with a central

opening adapted to annularly support an outer end portion of the bony protuberance of the elbow spaced from said base; and

a second support pad in said sleeve mounted on said first support pad and formed of resilient cellular foam with an



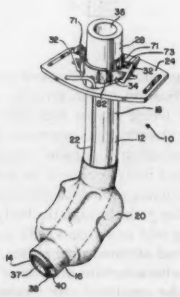
opening overlying the opening of said first support pad, said opening of said second pad being elongated outwardly with respect to said central opening of said first support pad in a direction extending longitudinally of the arm and having edges for supportive contact with the arm.

4,315,505

TRACHEOSTOMY TUBE WITH DISPOSABLE INNER CANNULA

Norman C. Crandall, Costa Mesa, and Robert C. French, El Toro, both of Calif., assignors to Shiley, Inc., Irvine, Calif.

Filed Apr. 7, 1980, Ser. No. 137,626
Int. Cl.³ A61M *25/02*
U.S. Cl. 128—200.26 **4 Claims**



1. A tracheostomy tube for insertion into a patient's trachea through an opening in the neck to assist breathing, said tube being adapted to use with disposable inner cannulae, comprising:

an outer cannula having a distal end for insertion within said trachea and a proximal end remaining outside said trachea, said distal end having a reduced diameter portion;

a disposable inner cannula having approximately at least the same length or longer length as said outer cannula removably inserted into said outer cannula, said disposable inner cannula having a tip at its distal end comprising an annular raised portion with an annular tapered surface sloping toward said tip, means for stationarily securing said inner cannula to said outer cannula; and

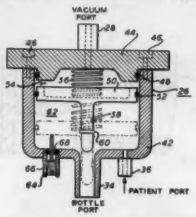
said tapered surface on said inner cannula abutting against said reduced diameter portion on said outer cannula upon insertion of said inner cannula into said outer cannula thereby providing means proximal the distal end of said disposable inner cannula and said outer cannula for (i) forming a gas seal between said disposable inner cannula and said outer cannula for preventing leakage of either incoming or expelling gas and (ii) compensating for dimensional variations in said disposable inner cannula by insuring that the distal tip of said inner cannula is flush with or extends only slightly beyond the end of the outer cannula.

4,315,506

POSITIVE PULSE DEVICE

John P. Kayser, Madison, and Norman A. Rick, Mt. Horeb, both of Wis., assignors to Airco, Inc., Montvale, N.J.

Continuation of Ser. No. 10,095, Feb. 7, 1979, abandoned. This application Oct. 14, 1980, Ser. No. 196,985
Int. Cl.³ A61M *1/00*
U.S. Cl. 128—276 **6 Claims**



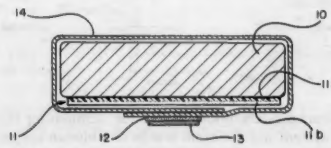
1. A positive pulse device operable from a vacuum source and adapted to be located in a patient drainage line leading from a patient to the vacuum source, said device comprising an enclosed housing, a movable piston within said housing separating the interior of said housing into first and second chambers, said second chamber having an inlet for receiving fluids from the patient and an outlet in communication with the vacuum source, said first chamber adapted to be connectible to said source of vacuum, bias means on said piston exerting a force thereon in a direction toward said second chamber, said first chamber being dimensioned such that vacuum applied to said first chamber overcomes said bias means to hold said piston in a first position withdrawn toward said first chamber, said first chamber being adapted to selectively be placed at atmosphere pressure causing said bias means to force said piston to move to a second position collapsing said second chamber, whereby fluids from the patient collected in said second chamber are forced therefrom in a backward direction toward the patient.

4,315,507

SANITARY NAPKIN WITH HEAT FUSIBLE BAFFLE

Howard A. Whitehead, and Attila Matray, both of Appleton, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Apr. 11, 1980, Ser. No. 139,580
Int. Cl.³ A61F *13/16*
U.S. Cl. 128—287 **12 Claims**

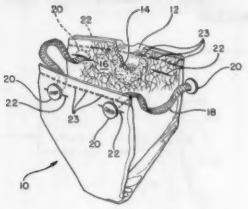


1. A multilayer sanitary appliance comprising a fluid pervious body contact layer, an absorbent layer and a fluid impervious exposed thermoplastic baffle, said baffle having at least two adjacent layers of material a first of which is fusible with at least a first of said layers being fused to either the body contact layer or the absorbent layer and another of said layers being nonfusible at temperatures greater than at least said first of said baffle layers.

4,315,508
SELF-CENTERING MULTIPLE USE GARMENT SUSPENSION SYSTEM

Martha E. Bolick, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Mar. 31, 1980, Ser. No. 135,536
Int. Cl.³ A61F *13/16*
U.S. Cl. 128—289 **10 Claims**



1. A garment and suspension system therefor for use in absorbing and containing human waste excrement consisting essentially of,

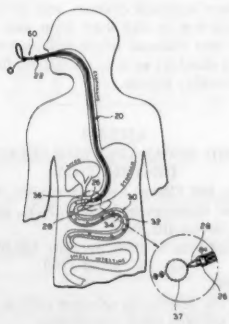
in combination, an absorbent pad having an absorbent medium contained between a liquid impervious backing and a facing material, said combination being of generally rectangular configuration and having a width in the range of from 6 to 22 inches and length in the range of from 10 to 34 inches with a releasable attachment means adjacent each corner thereof; and a pair of elastic straps formed from a soft, nonirritating, nonabrasive elastic having high strain and low stress properties with dimensions in the range of from 2 inches to 20 inches in length and ½ inch to 5 inches in width and having at each end fastening means for use in association with the attachment means of said absorbent sheet;

wherein said garment and suspension system in use results in the straps extending toward the waist of the wearer and at an angle of from 25° to 45° with horizontal and provides a vertical vector of force to maintain the garment snugly in place.

4,315,509
INSERTION AND REMOVAL CATHETERS AND INTESTINAL TUBES FOR RESTRICTING ABSORPTION

Julie A. Smit, 1045 Hinman Ave., Evanston, Ill. 60602

Continuation-in-part of Ser. No. 757,929, Jan. 10, 1977, Pat. No. 4,134,405. This application Oct. 16, 1978, Ser. No. 951,864
The portion of the term of this patent subsequent to Jan. 16, 1996, has been disclaimed.
Int. Cl.³ A61B *17/00*
U.S. Cl. 128—303 R **41 Claims**

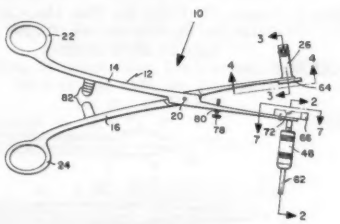


1. A method of inserting an instrument including a thin wall tube which is open on both ends and is implanted while completely empty and collapsed in radial dimension, said tube comprising means for restricting absorption of food chemicals within at least the intestinal portion of the alimentary canal of an animal body while said food chemicals are being squeezed by bodily peristaltic action, said method comprising the steps of (a) inserting a thin wall tube while in a state which is flexible enough to be passed completely through the throat and be implanted entirely within said portion of said alimentary canal which is below the stomach at a position wherein said tube does not extend out of the intestinal portion of the alimentary canal of said body while it is so implanted, said tube lacking substantially all radial rigidity and being completely collapsible at least in parts when empty and at the time of implanting, (b) locating said tube with its open ends positioned to enable digesting food chemicals to enter and expand said tube only to the extent that food is within said tube and to pass under peristaltic action completely through said tube while digestion continues whereby said tube may be used to control absorption of food chemicals in that portion of the alimentary canal which is lined by said tube, said digesting food chemicals which pass through said tube being the normally consumed food which enters the body in whole, non-digested form through the mouth of a patient, said non-digested food solids becoming partially digested in the stomach before coming into contact with and entering said implanted tube, and (c) anchoring said implant tube at a point which is below the intake to the stomach so that said implanted tube and its entire anchoring remain in place entirely within a selected part of the alimentary canal, below said intake point.

4,315,510
METHOD OF PERFORMING MALE STERILIZATION

Harry Kihn, Lawrenceville, N.J., assignor to Cooper Medical Devices Corporation, Newtown, Pa.

Filed May 16, 1979, Ser. No. 39,652
Int. Cl.³ A61B *17/36*
U.S. Cl. 128—303.1 **13 Claims**



13. In a method of sterilizing a male by coagulating the vas attached to the testes without substantially harming the scrotum skin adjacent said vas and without incision of said skin, the step which comprises directing microwave radiation at said vas through said skin along a path remote from said testes from outside said skin at a frequency effective to cause permanent coagulation of said vas substantially exclusively of said skin for sufficient time to heat said vas to a temperature at which said vas coagulates.

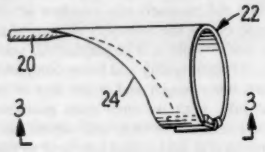
4,315,511
ENDARTERECTOMY APPARATUS

Albert K. Chin, Stanford, Calif., assignor to Thomas J. Fogarty, Palo Alto, Calif.

Filed Sep. 7, 1979, Ser. No. 73,252
Int. Cl.³ A61B *17/32*
U.S. Cl. 128—305 **2 Claims**

1. An endarterectomy instrument comprising: an annular knife having a cutting edge at one end thereof directed longitudinally of the knife and through a full 360° of its periphery; a

wire carrier attached tangentially to said knife and extending away from said one end in the direction of said cutting edge whereby said knife may be pulled along an occluded artery to excise an arteriosclerotic occlusion therefrom, said knife being split longitudinally and having overlapped end portions to thereby enable said knife to be yieldingly compressible radially for insertion within an artery and to thereafter enable said knife



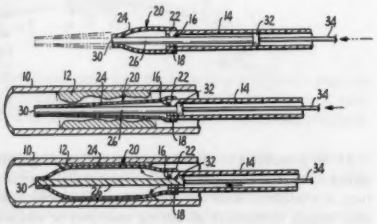
to apply a substantially constant outwardly directed pressure against and through a full 360° of the interior circumference of said artery as said occlusion is being excised to thereby maintain the knife against deviation from axial alignment with the artery; and, means carried by said knife to prevent said end portions from separating while permitting sliding movement of said end portions relative to each other during compression and expansion of said knife.

4,315,512

PISTON EXTENSION BALLOON DILATATION CATHETER APPARATUS AND METHOD

Thomas J. Fogarty, 770 Welch Rd., Palo Alto, Calif. 94304

Filed Jan. 24, 1980, Ser. No. 114,982
Int. Cl.³ A61M *29/02*
U.S. Cl. 128—344 **16 Claims**



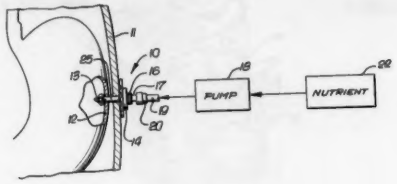
1. Apparatus for dilating a partially occluded section of a blood vessel, said apparatus comprising: an elongated flexible catheter adapted for passage through the vessel, said catheter having an open distal end; an elastomeric balloon having a mouth sealingly secured in fluid communication with the open distal end of the catheter; a piston connected to the balloon and slidably received within the catheter for movement relative thereto between an extended condition wherein the piston stretches the balloon lengthwise and a retracted position wherein the piston releases the balloon from such stretching; means to selectively move the piston between the retracted and extended conditions; said balloon having an outer diameter in its uninflated and extended condition which is less than the outer diameter of said catheter; and means to impart internal fluid pressure to the catheter to selectively inflate the balloon.

4,315,513

GASTROSTOMY AND OTHER PERCUTANEOUS TRANSPORT TUBES

Michael S. Nawash, 605 Nakoma St., Midland, Mich. 48640; Suzanne Stillman, 826 N. Whittier Dr., Beverly Hills, Calif. 90210, and Robert S. Mason, 745 W. Mariposa Ave., El Segundo, Calif. 90245

Filed Mar. 10, 1980, Ser. No. 129,089
Int. Cl.³ A61M *25/00, 3/00*
U.S. Cl. 128—348 **2 Claims**



1. In a gastrostomy or like percutaneous transport tube of the type having a length of tubing with a first end configured for enlargement when inserted into the stomach or other bodily region of a patient, said first end having apertures for the passage of fluid, a one-way valve and fluid supply coupling assembly at the other end of said tubing, comprising:

a rigid, generally cylindrical body having at one end a projection engaging said tubing, there being an axial channel through said projection, said body having at the other end a flange adapted to extend in closely spaced parallel relationship to the exterior abdomeninal wall then said percutaneous transport tube is emplaced,

connector means, exteriorly removably attachable to said body at the flange end thereof, for disconnectable coupling to a nutrient or like fluid supply, and

a one-way valve in said body comprising:

a tapered counterbore extending coaxially from the distal end of said projection to said axial channel,

a second counterbore extending coaxially through said flange end to said channel, and

a flexible resilient unitary valve member consisting of an elongated stem extending through said channel, a valve closure at one end of said stem, said valve closure being disposed within said tapered counterbore, and a crosspiece at the other end of said stem, said crosspiece being disposed within said second counterbore, said stem being slightly longer than said channel so as to permit limited axial movement of said unitary valve member from a closed position in which back pressure from said bodily region forces said valve closure into valve closing relationship with the shoulder between said tapered counterbore and said channel, and an open position in which nutrient or like fluid from said supply passing through said channel urges said valve closure away from said shoulder so as to permit the flow of said fluid into said bodily region.

4,315,514

METHOD AND APPARATUS FOR SELECTIVE CELL DESTRUCTION

William Drewes, 100 Ellison Ave., Bronxville, N.Y. 10708, and Martin Levine, Hastings-on-Hudson, N.Y., assignors to William Drewes, Bronxville, N.Y.

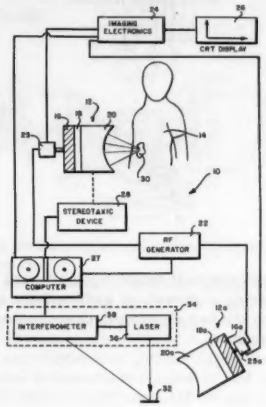
Filed May 8, 1980, Ser. No. 148,058
Int. Cl.³ A61B *5/00*
U.S. Cl. 128—653 **6 Claims**

1. A method for destroying selected cells in a host without damage to non-selected cells, comprising:

selecting a transmission path from an energy source to the selected cells;

determining one or more of the resonant frequencies of the selected cells;

comparing the transmissibility of the selected cells at said one or more resonant frequencies with the transmissibility of the non-selected cells in the transmission path at said one or more resonant frequencies;



selecting, as a destructive frequency, one of said one or more resonant frequencies at which the transmissibility of said selected cells is higher than the transmissibility of said non-selected cells in the transmission path; and

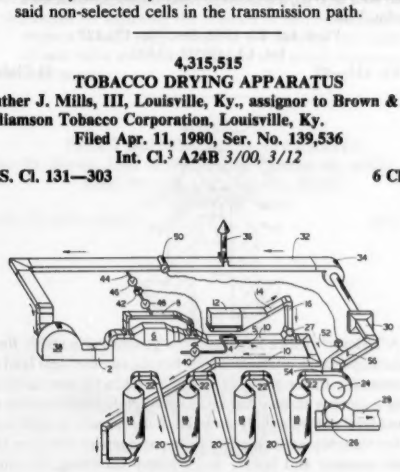
transmitting energy from said source at said destructive frequency along said transmission path with sufficient intensity to destroy said selected cells without destroying said non-selected cells in the transmission path.

4,315,515

TOBACCO DRYING APPARATUS

Luther J. Mills, III, Louisville, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Apr. 11, 1980, Ser. No. 139,536
Int. Cl.³ A24B *3/00, 3/12*
U.S. Cl. 131—303 **6 Claims**



1. An apparatus for humidifying air and drying tobacco comprising:

means for circulating the air in a substantially closed system;

means for heating the air in this system;

means for introducing tobacco at one end of the system and in the path of heated air;

means in advance of the tobacco introduction station for injecting steam into the air stream downstream of the means for heating the air in the system, said steam introduction being substantially parallel to the air stream;

means in the system at a point beyond the tobacco introduction station in which the tobacco is conveyed upwardly by the hot moisturized air;

means for separating the tobacco from the conveying air;

exhaust means for discharging moisture-ladened air from the system; and,

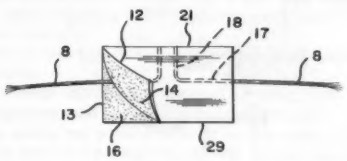
sensing means for sensing the temperature of the air and its humidity following the discharge of the tobacco, said sensing means regulating the amount of steam being injected into the system.

4,315,516

CONTINUOUS CHAIN FORMED FROM A MULTIPLICITY OF LOOPS FORMED FROM DENTAL FLOSS MATERIAL AND APPARATUS FOR PRODUCING THE SAME

Joseph Zappel, 2 Cielo Dr., Scotts Valley, Calif. 95066

Filed Sep. 19, 1980, Ser. No. 188,711
Int. Cl.³ A61C *15/00*
U.S. Cl. 132—90 **20 Claims**



1. As an article of manufacture, an elongated chain of indeterminate length and including a tape portion and a dental floss portion;

(a) said tape portion having adhesive on one surface thereof; and

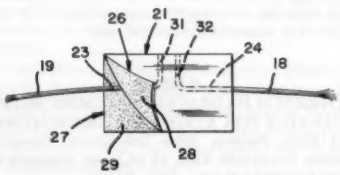
(b) said dental floss portion having sections thereof intermediate its ends adhesively attached to said tape portion.

4,315,517

DEVICE FOR CLEANING TEETH TO PREVENT THE FORMATION OF PLAQUE

Mark D. Krag, 217 Edelen Ave., Los Gatos, Calif. 95030

Filed Oct. 31, 1978, Ser. No. 956,249
Int. Cl.³ A61C *15/00*
U.S. Cl. 132—89 **9 Claims**



1. A device for cleaning teeth, comprising:

a first flexible strand of predetermined length having first and second ends;

a second flexible strand of predetermined length having first and second ends, said first and second strands forming a pair of strands, corresponding first and second ends of said pair of strands being in close proximity, said strands being of sufficient length to form, when said corresponding first and second ends are joined, a single closed loop large enough for at least one finger of each hand of the user to penetrate the loop; and

first and second adhesive tab means joining corresponding first ends and corresponding second ends, respectively, of

said pair of strands to complete a single, closed, flexible and limp loop.

4,315,518

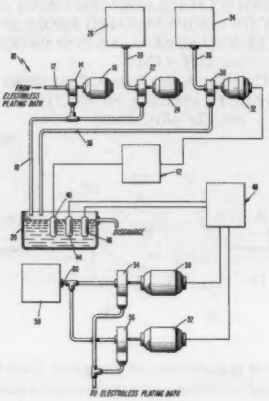
METHODS OF AND SYSTEM FOR CONTROLLING COPPER CONCENTRATION IN A SOLUTION

Ernest W. Sawyer, Richmond, Va., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,656

Int. Cl.³ G05D *11/13*

U.S. Cl. 137—3 **17 Claims**



1. A method of controlling copper concentration in a solution containing a complexer where complexer molarity exceeds copper molarity in a desired ratio, which comprises the steps of:

drawing a sample from a first solution containing a complexer where complexer molarity exceeds copper molarity in a desired ratio;

adding a second solution containing a known concentration of cupric ions to the sample to form a combined solution where the copper molarity exceeds the complexer molarity;

determining the copper concentration of the combined solution as a measure of the copper concentration in the first solution; and

adding cupric ions to the first solution in response to the determination of copper concentration of the combined solution to maintain the desired ratio.

4,315,519

GOVERNOR HYDRAULIC PRESSURE SUPPLY APPARATUS FOR AUTOMATIC TRANSMISSIONS

Nobuaki Miki, Nagoya; Shiro Sakakibara, Toyokawa, and Fumitomo Yokoyama, Anjo, all of Japan, assignors to Aisin-Warner Kabushiki Kaisha, Anjo, Japan

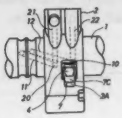
Filed Aug. 22, 1980, Ser. No. 180,431

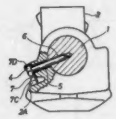
Claims priority, application Japan, Aug. 30, 1979, 54-119970[U]

Int. Cl.³ G05D *13/34*

U.S. Cl. 137—56 **4 Claims**

1. A hydraulic governor pressure supply apparatus for vehicle's automatic transmissions having governor valve means mounted on an output shaft from the automatic transmissions, the governor valve means including hydraulic fluid input and output lines and the output shaft including hydraulic fluid input and output lines which are connected with the corresponding input and output lines in the governor valve means for supplying an input line pressure to the governor valve means and for receiving a governor pressure output from the valve means, respectively, wherein the improvement includes tightening bolt means for tightening the combined governor valve means and output shaft in the region adjoining the interface between the two elements at which the input fluid lines and output fluid lines are connected with each other, respectively, the tightening bolt means being screwed to the shaft thereby producing a pressure or pushing force in the above region to bring the two elements in closer contact with each other in said region.





4,315,520

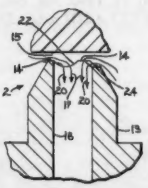
FLUID LEAKPORT ORIFICE STRUCTURE

Louis D. Atkinson, New Berlin, and Wesley W. Rineck, Wauwatosa, both of Wis., assignors to Airtrol Components, Inc., New Berlin, Wis.

Filed Jul. 22, 1980, Ser. No. 171,127

Int. Cl.³ G05D *16/00*

U.S. Cl. 137—82 **11 Claims**

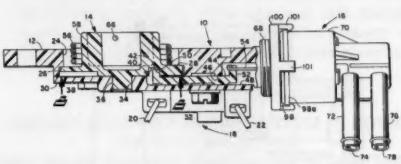


1. A leakport orifice apparatus for generating a stable fluid signal comprising a nozzle member having an outer seat land of a substantially flat continuous configuration, a closure member having a closure surface mounted in overlying relationship to the seat land and relatively movable with respect to such seat land for variably adjusting the flow passageway between the closure member and nozzle and thereby throttling the fluid passing between the nozzle and the closure member and said closure member being capable of vibrational movement with respect to the nozzle, and means mounting said closure member for relative movement to and from the seat land, said seat land and said closure member being constructed and arranged to establish and maintain an auxiliary flow path in addition to and external to said restricted flow passageway between the seat land and the closure member, said auxiliary flow passageway external to said restricted flow passageway being selected and constructed to compensate for vibration forces generated by the jet stream passing between the orifice and the closure member.

4,315,521
FLUID PRESSURE SIGNAL CONTROLLER

Patrick J. Anderson, Hoffman Estates, and Andrew A. Kenny, Roselle, both of Ill., assignors to Eaton Corporation, Cleveland, Ohio

Filed May 5, 1980, Ser. No. 146,903
Int. Cl.³ G05D *16/00*
U.S. Cl. 137—85 **25 Claims**

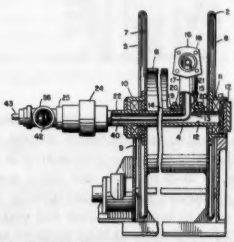


1. A fluid pressure signal controller comprising:
(a) support means;
(b) cam means rotatably mounted on said support means, said cam means being adapted for connection to a rotatable input shaft for rotation thereby;
(c) cam follower means movably received on said support means and operative to provide substantially rectilinear movement in response to rotation of said cam means;
(d) valve means movably mounted on said support means, said valve means providing, upon connection to a source of variable fluid pressure, a regulated fluid pressue output signal, said valve means including a valve seat and a valve member movable with respect thereto for regulating said output signal and means biasing said valve means for altering said regulated output signal, wherein said cam follower means is operatively connected to said biasing means for varying the bias on said valve means in response to rotary movement of said cam means; and
(e) means for adjusting the position of said valve means with respect to said support means for altering the calibration of said valve means with respect to a given position of said cam means.

4,315,522
FLUID DISTRIBUTION APPARATUS

Ray M. Brown, 4548 N. Milwaukee, Chicago, Ill. 60630

Filed Nov. 15, 1979, Ser. No. 94,369
Int. Cl.³ B65H *75/34*
U.S. Cl. 137—355.17 **12 Claims**



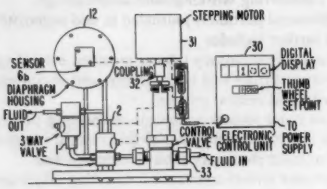
1. Fluid distribution apparatus comprising
a. supporting means,
b. a hose reel comprising
(1) an elongated central portion rotatably mounted on said supporting means for rotation around the longitudinal axis of said central portion, and
(2) a body portion disposed on said central portion for rotation therewith,
c. conduit means, including said central portion, for feeding working fluid therethrough,
d. said conduit means also including an elongated, flexible conduit adapted to be wound on said reel,
e. said flexible conduit comprising an inner hose and an outer hose, said inner hoses disposed inside of the outer hose,
f. connecting means on said central portion for affixing one end of said outer hose in communication with said central portion for the transfer of working fluid therethrough,
g. said inner hose extending through said connecting means on said central portion and through said central portion for transferring working fluid therethrough,
h. said central portion is journaled in said supporting means, and further includes
(1) an outer stationary tubular member, extending radially outward from said body portion and in communication with said central portion,
(2) an outer swivel connector connecting said outer stationary tubular member to said central portion,
(3) an inner stationary tubular member, and
(4) an iner swivel connector connecting said inner stationary tubular member to one end of said inner hoses;
i. said outer stationary tubular member comprises a T-connector having
(1) a proximal end portion connected to said swivel connector,
(2) a distal end portion disposed in substantially axial alignment with said proximal end portion, and
(3) a middle end portion disposed between said proximal and distal end portions thereof and opening laterally to the axial alignment of said proximal and distal end portions,
j. said inner stationary tubular member is disposed in said distal end portion; and
k. said reel being rotatable for winding said flexible conduit onto said reel and unwinding said flexible conduit from said reel.

8. Fluid distribution apparatus comprising
a. supporting means,
b. a hose reel comprising
(1) an elongated central portion rotatably mounted on said supporting means for rotation around the longitudinal axis of said central portion, and
(2) a body portion disposed on said central portion for rotation therewith,
c. an elongated, flexible conduit adapted to be wound on said reel,
d. said conduit
(1) comprising an inner hose and an outer hose, and said inner hose disposed within said outer hose and said conduit having a proximal end section and a distal end section,
e. said central portion having a passageway disposed longitudinally therein for feeding working fluid therethrough,
f. connecting means on said central portion affixing the proximal end of said outer hose to said central portion in communication with said passageway for transferring working fluid therethrough,
g. said inner hose extending through said connecting means and said passageway for transferring working fluid, and
h. said reel being rotatable in two opposite directions around said longitudinal axis of said central portion for
(1) winding said conduit onto said reel, and
(2) unwinding said conduit from said reel, respectively
i. said conduit includes a connector having
(1) a proximal end segment, including an inner tubular member and an outer tubular member connected to respective ends of said hoses at said distal end section of said conduit, and
(2) a distal end segment wherein said inner tubular member extends through the wall of said outer tubular member and said inner and outer members are disposed in side-by-side relation to each other.

4,315,523
ELECTRONICALLY CONTROLLED FLOW METER AND FLOW CONTROL SYSTEM

Imad Mahawili, Sunnyvale, and Timothy J. Boyle, Cupertino, both of Calif., assignors to American Flow Systems, Inc., Sunnyvale, Calif.

Filed Mar. 6, 1980, Ser. No. 127,918
Int. Cl.³ G01F 3/20
U.S. Cl. 137—486 **11 Claims**



1. Structure comprising:

a chamber containing a first and a second opening through which fluid can pass;

a flexible diaphragm located in said chamber so as to divide said chamber into two portions, a first chamber accessed through said first opening and a second portion being accessed through said second opening;

a magnet attached to said flexible diaphragm;

means for directing fluid whose flow is being measured through said first opening into said first chamber while withdrawing the fluid whose flow is being measured through said second opening from said second chamber and, into response to a control signal, reversing the chambers in which the fluid is inserted and from which the fluid is withdrawn, the movement of fluid into one chamber and out of the other chamber causing said flexible diaphragm to move into the chamber from which the fluid is being withdrawn;

means for continuously producing an output signal representative of the position of said magnet;

means for converting said output signal to a sequence of digital signals;

means for processing said sequence of digital signals to produce a second signal representative of the flow rate of said fluid into and out of said chamber;

means for comparing said flow rate to a reference flow rate to produce a control signal representative of the difference between said measured flow rate and said reference flow rate; and

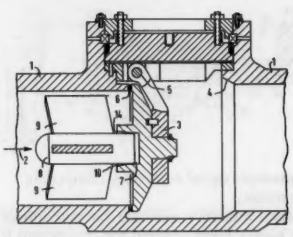
means, responsive to said control signal, for changing the flow rate of said fluid.

4,315,524
DAMPING DEVICE FOR CHECK VALVES

Jürgen Hoffmann, Erlangen, and Werner Eck, Herzogenaurach, both of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Aug. 13, 1980, Ser. No. 177,717
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1979, 2933201
Int. Cl.³ F16K 15/03
U.S. Cl. 137—514.3 **3 Claims**

1. Damping device for a check valve in a pipeline traversible by a liquid, the check valve havng a closure member pivotable by flow of the liquid into a position wherein it it lies on a valve seat in the pipeline so as to close the valve, the damping device comprising at least two parts, of which a first part is a cylinder and a second part a piston reciprocatingly received in said cylinder, one of said first and second parts being connected to the closure member and the other of said first and second parts being connected to the valve seat, said cylinder comprising means defining a depression closed at one end thereof and open at the opposite end thereof, said piston comprising a plunger substantially matching the cross section of said depression and disposed so as to project into said open end of said depression shortly before the closure member has reached the position thereof wherein the valve is closed, the outer surface of said plunger and the defining surface of said depression being so formed as to define a gap narrowing down during closing movement of the closure member, and including substantially radially extending support plates securing said other of said

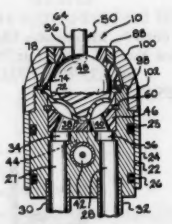


first and second parts to the pipeline carrying said valve seat, said other of said first and second parts being an elongated member disposed substantially coaxially with the pipeline, said one of said first and second parts being movable together with the closure member into the position wherein the closure member lies on the valve seat in the pipeline so as to close the valve, said one of said first and second parts, in said closed position of the valve, being disposed coaxially with said other of said first and second parts and the pipeline.

4,315,525
MIXING VALVE

Walker Messick, and Gerald E. Christiansen, both of Flora, Ind., assignors to Stephen A. Young Corporation, Flora, Ind.

Filed Dec. 22, 1980, Ser. No. 218,783
Int. Cl.³ F16K 7/12
U.S. Cl. 137—625.4 **6 Claims**



1. A mixing valve comprising:

a body having two inlet passages, an outlet duct and a valve cavity including a valve seat disposed therein with the outlet duct and the inlet passages terminating in an outlet port and two spaced inlet ports to said valve seat,

a generally spherical closure member universally pivotable within said body so as to normally cover and seal said inlet ports and prevent flow from said inlet ports to said outlet port in a closed position,

said closure member having two recesses spaced apart by a divider portion such that upon movement of said closure member to an open mixing position each of said recesses permits fluid communication between one of said inlet ports and said outlet port to open both inlet ports,

each of said recesses in said open mixing position overlying one of said inlet ports and extending circumferentially beyond said inlet port in a direction away from the other of said inlet ports such that upon movement of said divider

portion to progressively overly and close one of said inlet ports the other of said inlet ports remains substantially open,

means for moving said closure member between said closed position and said open mixing position and to control the mixture of the fluids from the two inlet ports by moving said closure member to other open positions; and

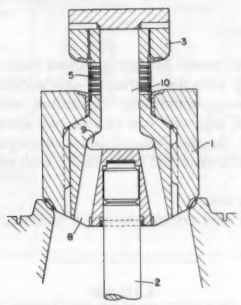
a flexible diaphram fitted between said valve seat and said closure member so as to enhance sealing between said closure member and said inlet and outlet ports, said diaphram being resiliently deformable into said recesses in response to pressure of fluid in said inlet passages when said closure member is moved to said open positions.

4,315,526

STEAM VALVE OF TURBINE SYSTEM IN POWER GENERATING PLANT

Atushi Ohtomo, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Oct. 24, 1979, Ser. No. 87,673
Claims priority, application Japan, Oct. 27, 1978, 53-147030
Int. Cl.³ F16K *1/32*
U.S. Cl. 137—630.14 **1 Claim**



1. In a steam valve assembly for use in a steam turbine system of a power plant of the type comprising a by-pass valve having a peripheral wall connected to a boiler through a plurality of holes formed through said peripheral wall, said by-pass valve being provided with an inner chamber in communication with said holes, a main valve disposed below and slidably connected to said by-pass valve, a valve seat disposed around said by-pass valve, a valve rod having a top end fitted into said by-pass valve, and a passage communicating said chamber of said by-pass valve with a turbine, the improvement in which said chamber of said by-pass valve takes the form of a cylindrical space with its bottom portion enlarged and said passage opens at said enlarged bottom portion.

4,315,527

EXPANSION TANKS FOR PRESSURIZED FLUIDS AND DIAPHRAGMS THEREFOR

Leon Donnenberg, Levittown, N.Y., and Helmut J. Draxler, Cincinnati, Ohio, assignors to TMI Sales Corporation, Forest Hills, N.Y.

Filed Jan. 14, 1980, Ser. No. 111,551
Int. Cl.³ F16L *55/04*
U.S. Cl. 138—30 **6 Claims**

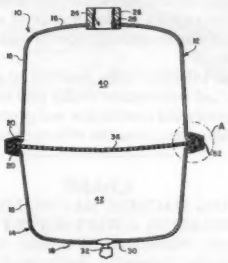
1. An expansion tank for pressurized fluids comprising:

first and second shell halves, each of said shell halves including a central wall portion and a sidewall merging at one extremity thereof with said central wall portion and terminating at the other extremity thereof in a peripherally extending outwardly directed skirt; and shell halves being oriented with the said extremities thereof having the respective said skirts facing toward each other, whereby said skirts are generally superposed;

an opening in one of said shell halves for the passage therethrough of a liquid;

an opening in the other of said shell halves for the passage therethrough of air;

a diaphragm formed of elastomeric material extending across the interior of the tank and having a peripheral edge which is between said superposed skirts and said tank shell halves, said diaphragm comprising a central sheet terminating in said peripheral edge, said peripheral edge being formed by a peripherally extending column integral with and formed of the same material as said central sheet



and a pair of flange elements and a web element therebetween integral with and extending inwardly of said sheet from said column, each of said flange elements being spaced from an opposed side of said web element to form an annular slot therewith;

said skirts of said shell halves being releasably and sealingly positioned within respective ones of said annular slots such that said diaphragm divides the interior of the thus formed tank into a pair of chambers sealed relative to each other and relative to the ambient atmosphere external to the tank;

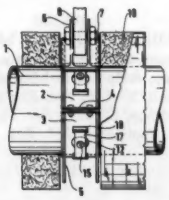
and locking means for releasably maintaining said shell halves and said peripheral edge of the diaphragm in joined sealing relationship.

4,315,528

SUPPORT OF FIXING DEVICE FOR PIPES

Pierre Pouderoux, Meudon La Foret; Jean-Jacques Marsault, Meudon; Pierre Devoucoux, Suresnes, and Roger Gerard, Hargeville, all of France, assignors to Societe Anonyme dite: Stein Industrie, Velizy-Villacoublay, France

Filed Nov. 30, 1979, Ser. No. 99,231
Claims priority, application France, Nov. 30, 1978, 78 33887
Int. Cl.³ F16L *3/00*; E21F *17/02*
U.S. Cl. 138—106 **4 Claims**



1. A pipe support for pipes whose walls are thin in proportion to their diameter and which are subjected to large temperature variations and/or which must be protected against earthquakes, said device comprising;

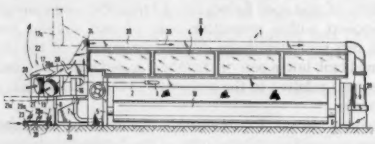
a circular collar which surrounds the pipe and is spaced apart therefrom and which is pierced with holes along at

least two points spaced symmetrically about the periphery of said collar;
fittings welded to the pipe at circumferential positions on the pipe which are centered with respect to said respective holes in said collar;
connection parts engaged in respective fittings;
at least one of said fittings and said engaged connection parts at each of said holes extending radially through said holes and outwardly of said pipe;
projecting parts integral with said collar at circumferentially spaced positions at opposite sides of each hole and projecting outwardly thereof; and
wherein said device further includes flexible strips being welded intermediate of their ends to said connection parts, extending parallel to said collar, and being welded on their ends to the radially outboard ends of said parts integral with said collar to opposite sides of said holes and remote therefrom;
whereby, said flexible strips function to provide sufficient play to avoid deformation to the pipe subsequent to thermal expansion and contraction and protect said pipe to an appreciable extent from the effects of earthquakes.

4,315,529
WEAVING MACHINE HAVING MEANS FOR VENTILATING A WEFT SUPPLY MEANS

Heinz Baumann, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jul. 17, 1979, Ser. No. 58,246
Claims priority, application Switzerland, Jul. 17, 1978, 7684/78
Int. Cl.³ D03D *49/00*
U.S. Cl. 139—1 C **10 Claims**



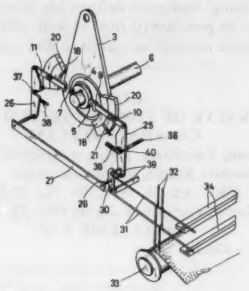
1. A weaving machine comprising
a machine frame;
first means mounted on said frame for forming a shed of warp yarns in a given region of said frame;
a weft supply means disposed outside said region for supplying a weft yarn to said region, said weft supply means including at least one weft bobbin, a yarn brake and a weft storage means; and
second means mounted on said frame for directing an air flow past said weft supply means, said second means including a hood extending over said weft supply means.

4,315,530
CONTROL FOR A DOBBY MECHANISM

Josef Brock, Viersen, and Paul Surkamp, Krefeld, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Carl Zangs Aktiengesellschaft, Krefeld, Fed. Rep. of Germany

Filed Sep. 21, 1979, Ser. No. 77,827
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1978, 2841278
Int. Cl.³ D03C *1/12*
U.S. Cl. 139—76 **9 Claims**

1. In a control for a dobby mechanism with a wedge coupling between a drive shaft and an eccentric for the shaft motion, whereby the wedge is couplable and uncouplable with a coupling member in two coupling positions which are diametrically opposite to each other, the improvement comprising
two radially moveably mounted switching rods,
each coupling member is connected with each one of said radially moveably mounted switching rods, respectively,
two control levers and a coupling rod operatively connected and constituting means for connecting said two switching rods with each other,
spring means for pulling said control levers under spring action into starting positions thereof,
a moveable needle mechanism,
pressure guides constituting means cooperating with the needle mechanism,

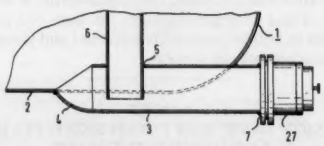


a control axle means for being moved back and forth synchronously with the rhythm of said pressure guides,
a balance lever operatively connected with said needle mechanism and with one of said two control levers, the latter one via said balance lever cooperating with said needle mechanism and cooperating with said control axle means,
a fixed pivot axle,
the other of said control levers is mounted on said fixed pivot axle.

4,315,531
TRANSPORT CONTAINER

Helmut Gerhard, Weitefeld, Fed. Rep. of Germany, assignor to Westerwalder Eisenwerk Gerhard GmbH, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 35,812, May 4, 1979, abandoned. This application May 25, 1979, Ser. No. 42,552
Claims priority, application Fed. Rep. of Germany, May 6, 1978, 2819955
Int. Cl.³ B65B *3/04*; B65D *90/10*
U.S. Cl. 141—98 **41 Claims**



1. Transport container comprising:
a large diameter cylindrical shell for holding material to be transported, said shell being formed by a cylindrical shell wall,
at least one pipe member rigidly connected to the cylindrical shell wall,
and connection means for fixtures such as material inlet and outlet means, relief pressure valve means, and the like,
wherein the connection means are carried by the at least one pipe member, and wherein each of the at least one pipe members has a curved outer pipe wall disposed longitudinally astride said cylindrical shell wall with one of upper and lower circumferentially contiguous portions thereof

being within said shell wall and the other of said upper and lower portions being outside of said shell, whereby stresses in the region of said rigid connection are reduced.

4,315,532

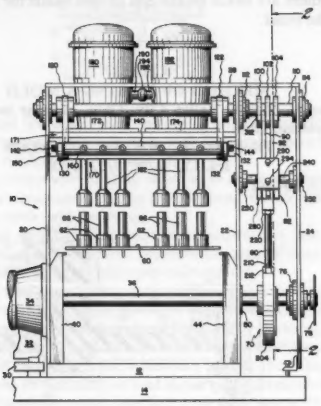
APPARATUS FOR FILLING CAULKING TUBES WITH IMPROVED LINKAGE MEANS

Robert M. Elsworth, 330 Albany-Shaker Rd., Loudonville, N.Y. 12211, assignor to Robert M. Elsworth, Loudonville, N.Y.

Filed Apr. 27, 1979, Ser. No. 33,830

Int. Cl.³ B65B *43/56*

U.S. Cl. 141—183 **26 Claims**



1. An apparatus for filling caulking tubes with liquid compositions and with improved adjusting means for determining the amount of liquid composition being placed in the caulking tubes, comprising,

a frame,

drive means in the lower end of said frame for driving a conveyor belt means with empty caulking tubes placed thereon;

feed means being driven by said linkage means for passing said liquid composition into the empty caulking tubes on said conveyor belt means where the amount of said composition placed into said caulking tubes is determined by the travel in said linkage means wherein said linkage means and adjusting means comprises cam and lever means driven by said drive means said cam and lever means connected to and driving said adjusting means which is a plate which reciprocates at its rear end on a fixed shaft surrounded by box means wherein said plate is adjusted and maintained in position in said box means by screw means and such that the upper drive lever which drives said feed means is connected in a fixed position on said box means but is slideably connected to said plate means such that said cam and lever means will drive the forward end of said plate means in a reciprocating motion which will be transmitted to said upper lever to reciprocate said upper drive lever and the amount of reciprocating motion transmitted to said upper drive lever will depend on the lateral position of said plate means in said box means which is determined by said screw means and which determines the amount of travel of said upper drive lever about the fixed shaft to which said plate means is connected.

4,315,533

TRANSFER SYSTEMS

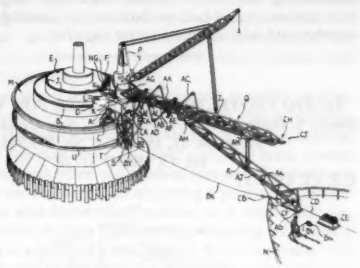
Geoffrey J. Eagles, Meopham, England, assignor to GEC Mechanical Handling Limited, Wiltshire, England

Filed Mar. 29, 1979, Ser. No. 24,884

Claims priority, application United Kingdom, Jun. 30, 1978, 28427/78

Int. Cl.³ B65B *3/04*; B67D *5/00*

U.S. Cl. 141—387 **16 Claims**



1. An arrangement for establishing a mechanical connection between two relatively movable structures comprising a double boom assembly carried by a support which is rotatably mounted on one said structure for enabling the boom assembly to be slewed about a generally vertical axis, the double boom assembly comprising a main boom pivotably carried by the support, so that it can be raised and lowered, and an auxiliary boom carried by a trolley which is capable of axial movement along the main boom, and, at the outer end of the auxiliary boom, a coupling means for connecting said end of the auxiliary boom to cooperating coupling means of the other structure and incorporating or associated with a universal joint which permits a degree of movement between the second structure and the boom assembly, and the auxiliary boom being supported intermediate its ends by a cable and pulley system, which system incorporates one or more lower pulleys at a fixed position on the auxiliary boom, and one or more upper pulleys carried by a further trolley supported by the main boom and movable axially along it at a fixed distance outwardly from the main trolley.

4,315,534

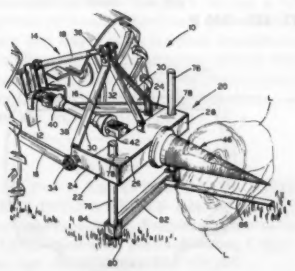
WOOD SPLITTER

George H. Blackstone, Toledo, Ohio, assignor to Arnold Industries, Inc., Toledo, Ohio

Filed Jul. 14, 1980, Ser. No. 168,480

Int. Cl.³ B27L *7/00*

U.S. Cl. 144—194 **10 Claims**



1. A wood splitter comprising a splitter cone of generally truncated conical shape having an opening at its smaller end, a conical tip having a threaded shank extending through said

opening, a hollow shaft extending into said splitter cone from the larger end thereof, said hollow shaft having an internally-threaded end into which said threaded shank is threaded, a rod-like elongate member in said hollow shaft, said rod-like member having an outer diameter similar to the inner diameter of said hollow shaft to fit closely therewith, said rod-like member having one end terminating short of said threaded shank, and having another end terminating outside said splitter member near the outer end of said hollow shaft, and means for maintaining said rod-like member in a fixed longitudinal position relative to said hollow shaft and for causing said rod-like member and said sleeve to rotate together.

4,315,535

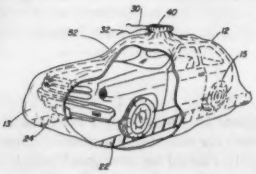
FLOOD PROTECTION CONTAINER FOR VEHICLES

Daniel S. Battle, 2473 N. Rampart St., New Orleans, La. 70117

Filed Jul. 31, 1980, Ser. No. 173,992

Int. Cl.³ B65D *81/18*

U.S. Cl. 150—11 **11 Claims**



1. A flood protection apparatus for vehicles, comprising:

a. a unitary flexible container, having at least a bottom, and a continuous sidewall integrally and sealably connected thereto and extending upward during operation;

b. an upper orifice in the container for receiving a vehicle within;

c. a length of cord housed within a continuous channel on the uppermost end of the sidewall for constricting the orifice of the container after the vehicle has been placed within;

d. at least one marking placed on the bottom of the container running its length, and up one side of the container for indicating placement of the tires of the vehicle within the container.

4,315,536

PNEUMATIC TIRE

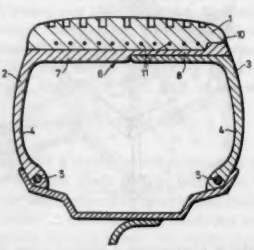
Ulrich Knipp, Bergisch-Gladbach; Otto Ganster, and Gerd Sahler, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 8, 1978, Ser. No. 913,702

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1977, 2729061

Int. Cl.³ B60C *19/00*

U.S. Cl. 152—330 R **5 Claims**



1. A pneumatic tire comprising an encircling tread and two side members, wherein each side member comprises a side wall having a bead ring and part of the tread backing, characterized in that said tread backing has the following features:

(a) the tread backing is formed as a ring which extends to the center of the tire and is intimately joined to the side wall on the other side;

(b) bands whose length is substantially equal to the width of said ring are fixed on the circumference of said ring in the center of the tread;

(c) the width of said bands is approximately equal to the distance between said bands;

(d) there are recesses in the part of said ring facing the tread, into which said bands of the other side fit during assembly, so that said tread backing has a substantially flush surface after assembly and so that each band will be in direct contact with the tread; and

(e) there are beads on the end of said bands for clamping in the tread.

4,315,537

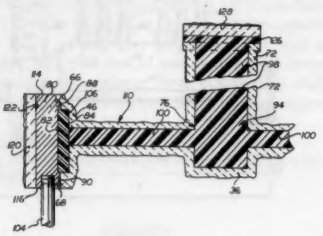
METHOD OF MAKING A MOLD

William S. Blazek, Valley City, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed May 21, 1976, Ser. No. 688,525

Int. Cl.³ B22C *9/22, 9/00*

U.S. Cl. 164—27 **48 Claims**



1. A method of making a mold for a cast product having a plurality of airfoils disposed in a circular array, said method comprising the steps of providing a plurality of airfoil pattern segments formed of a relatively flexible and disposable material, providing a circular pattern member formed of a material having a greater rigidity than material forming the airfoil pattern segments, placing the airfoil pattern segments in a circular array engaging the circular pattern member to form a pattern assembly, said step of placing the airfoil pattern segments in a circular array includes placing the airfoil pattern segments in an array with joints between the airfoil pattern segments free of material interconnecting the airfoil pattern segments so that the airfoil pattern segments can be readily moved relative to each other, connecting the airfoil pattern segments with the circular pattern member to thereby retard movement of the airfoil pattern segments relative to each other and the circular pattern member while maintaining the joints between the airfoil pattern segments free of material interconnecting the airfoil pattern segments, repetitively dipping the pattern assembly in liquid ceramic mold material to form a covering of ceramic mold material overlying at least a portion of the pattern assembly, at least partially supporting the airfoil pattern segments with the relatively rigid circular pattern member during said dipping steps, at least partially drying the covering of ceramic mold material overlying the pattern assembly, disposing of the airfoil pattern segments to expose a circular array of ceramic airfoil mold surfaces having configurations corresponding to the configurations of the airfoil pattern segments, and moving the relatively rigid circular pattern member away from the ceramic airfoil mold surface after

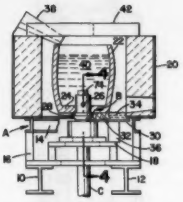
performing said step of disposing of the airfoil pattern segments.

4,315,538

METHOD AND APPARATUS TO EFFECT A FINE GRAIN SIZE IN CONTINUOUS CAST METALS

Thomas D. Nielsen, 148 Overbrook Rd., Elyria, Ohio 44035

Filed Mar. 31, 1980, Ser. No. 135,330
Int. Cl.³ B22D *11/00*
U.S. Cl. 164—488 **7 Claims**



1. A method for continuous casting of an alloy rod for obtaining a polygonal grain structure with fine grain boundaries, said method comprising the steps of:

providing a reservoir of alloy material in its liquid state and a hollow continuous casting die disposed in flow communication with said reservoir;

maintaining said alloy material at a temperature above its liquid temperature at least adjacent the area of flow communication between said reservoir and die;

delivering said liquid alloy material from said reservoir to said die through flow passages which are completely submerged in said reservoir of liquid alloy material;

transforming said liquid alloy material to a solid state in said die at an interface zone extending across the cross-sectional area of said alloy as said liquid alloy material moves through said die to said interface zone from a near freezing zone adjacent said interface zone;

said step of transforming said liquid alloy material to a solid state being carried out to obtain a general fine polygonal grain structure throughout substantially the entire cross-sectional area of said alloy at said interface zone by eliminating gross directional solidification of said alloy material at said interface zone;

said step of transforming said liquid alloy material to a solid state with a generally polygonal grain structure being carried out by maintaining the temperature of said liquid alloy material generally uniform throughout the cross-sectional area thereof at least adjacent said near freezing zone; and,

said step of maintaining the temperature of said liquid alloy material generally uniform including the step of producing transverse movement of said liquid alloy material throughout substantially the entire cross-sectional area thereof adjacent said near freezing zone in a direction transverse to the direction of movement of said alloy material through said die, said step of producing transverse movement of said liquid alloy material being carried out by focusing entry of said liquid alloy material into said die through said passages so as to impart a generally cyclonic motion thereto during said step of delivering.

4. In apparatus for continuous casting of an elongated rod wherein liquid alloy material flows from a reservoir into a hollow die through flow passages which are completely submerged in said liquid alloy material in said reservoir for transformation into a solid state at an interface zone to form a portion of said rod having the cross sectional conformation of said die and wherein rod portions thus formed are continuously drawn outwardly from a die exit end, an improved arrangement for obtaining a polygonal grain structure and fine grain boundaries in said rod comprising:

heat controlling means disposed in operative communication with said die to facilitate generally uniform temperatures in said liquid alloy material at a near freezing zone therefor adjacent said interface zone, said heat controlling means preventing the formation of thermal gradients in said alloy material for a sufficient magnitude to produce gross directional solidification thereof at said interface zone; and,

said heat controlling means including means for continuously mixing said alloy material in said die at least adjacent said near freezing zone as said alloy material flow toward said interface zone by producing transverse movement of said liquid alloy material throughout substantially the entire cross-sectional area thereof at least adjacent said near freezing zone,

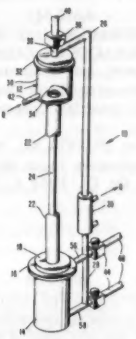
wherein said means for mixing includes a plurality of alloy feed passages defined by feed openings communicating between said reservoir and the interior of said die adjacent said near freezing zone, said feed openings being spaced apart from each other and focused into said die interior in a manner for automatically imparting a generally cyclonic motion to said liquid alloy material as it enters said die, said cyclonic motion also causing shearing of primary dendrites in said alloy from adjacent the internal side wall of said die and distributing said dendrites across said interface zone to provide nuclei for equiaxed crystals.

4,315,539

SELF EQUALIZING CONTROL MECHANISM FOR OSMOTICALLY PUMPED HEAT PIPES

Robert A. Anderson, Ridgecrest, and George L. Fleischman, Cerritos, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 26, 1979, Ser. No. 106,986
Int. Cl.³ F28D *15/00*
U.S. Cl. 165—1 **13 Claims**



12. In an osmotically pumped heat pipe having a solvent evaporator, a solvent permeable membrane and serially coupled solvent vapor and liquid paths coupled therebetween, a method for controlling the rate of pumping solvent through the solvent permeable membrane to the evaporator comprising the step of flowing solvent vapor between the solvent side of the membrane and the solvent vapor path.

4,315,540

DEVICE FOR FIXING A RADIATOR INTO A VEHICLE PARTICULARLY INTO A HEAVY-TRUCK VEHICLE

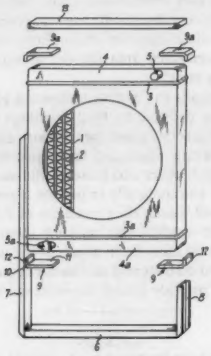
Jean-Pierre Moranne, Franconville, France, assignor to Societe Anonyme des Usines Chausson, Hauts-de-Seine, France

Filed Apr. 25, 1980, Ser. No. 145,269
Claims priority, application France, May 4, 1979, 79 11294
Int. Cl.³ F28F *9/00*
U.S. Cl. 165—67 **13 Claims**

1. An arrangement for resiliently mounting a radiator having

a front face adapted to be mounted vertically in a vehicle, the arrangement comprising:

a cradle surrounding the radiator, means to mount said cradle on said vehicle said radiator having upper and lower headers which each include horizontal and vertical portions, said horizontal and vertical portions being disposed substantially perpendicular to said front face; and



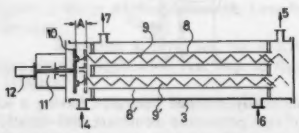
resilient means mounted between said horizontal portion of said headers and corresponding adjacent portion of said cradle and also between said vertical portion of said headers and corresponding adjacent portion of said cradle, said resilient means applying permanent compression forces onto the radiator for isolating it from said cradle.

4,315,541

DEVICE FOR SCRAPING OFF DEPOSITS FROM INTERNAL SURFACES OF ELONGATED TUBES

Sadao Murata, Takaishi, and Tadanobu Numata, Kamakura, both of Japan, assignors to Mitsui Toatsu Chemicals Incorporated and Toyo Engineering Corporation, both of Tokyo, Japan

Filed Aug. 29, 1979, Ser. No. 70,615
Claims priority, application Japan, Sep. 6, 1978, 53-108514
Int. Cl.³ F28F *9/24*
U.S. Cl. 165—94 **4 Claims**



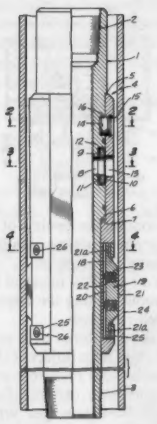
1. A device for scraping off a deposit of a polymer from the internal wall surface of the heat transfer tube of a multi-tubular heat exchanger for an external cooler to be used for a continuous polymerization process, the resulting liquid polymerization product being passed through said heat transfer tube; said device comprising a plurality of flexible, helical coil springs each of which is adapted to be installed in a respective one of the tubes and is sized so as to have a small clearance from the internal wall of the tube, the pitch length of each said flexible, helical coil spring being from one-tenth to ten times the length of the internal diameter of said tube; means for reciprocally moving each said flexible, helical coil spring for the length equivalent to at least three-fourths of the pitch length of said flexible, helical coil spring; and means for coupling one common end of the coil springs to the means for reciprocally moving each said flexible, helical coil spring whereby each said flexible, helical coil spring scrapes off the deposit from the internal wall surface of its respective tube.

4,315,542

MECHANICAL TUBING DRAIN

Roy R. Dockins, Jr., 1906 Ninth St., Anaheim, Calif. 92802

Filed [illegible] 26, 1979, Ser. No. 88,364
Int. Cl.³ E21B *33/129, 34/12*
U.S. Cl. 166—117.7 **8 Claims**



1. A drain for a well tubing string, comprising:

a tubular mandrel having at least one lateral port and adapted to be interposed between sections of a tubing string:

a sleeve member surrounding said mandrel and rotationally movable thereon, said sleeve having at least one lateral port;

sealing means disposed about the lateral mandrel port sealing engaging said sleeve, said means comprising an enlarged annular recess in said mandrel surrounding said mandrel port, a sealing ring situated in said recess, said ring having a width less than the depth of said recess providing a gap between the outer surface of said ring and the inner surface of said sleeve, a washer ring surrounding said sealing ring in sealing contact with said sleeve, and an O-ring of lesser diameter than said washer ring, said O-ring situated between said sealing ring and the bottom surface of said recess;

support means for maintaining said mandrel port and said sleeve port in longitudinal alignment;

guide means for controlling rotational movement of said sleeve with respect to said mandrel;

stop means on said sleeve for engaging the casing wall of an oil well, said means operative to limit rotation of said sleeve when said tubing string is rotated.

4,315,543

SEAL SYSTEM FOR WELLHEAD ISOLATION TOOL DIFFUSER

Thomas J. Luers, and Richard L. Giroux, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

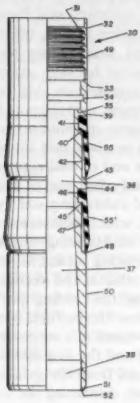
Filed Aug. 10, 1979, Ser. No. 65,654
Int. Cl.³ E21B *33/126*
U.S. Cl. 166—202 **13 Claims**

1. Seal means for a guide nose of a wellhead isolation tool, comprising:

a resilient, elastomeric seal in the form of an outwardly flared inverted cup having an opening therethrough, a

relatively thick upper wall and a relatively thin lower wall; and

a stepped circumferential groove in the exterior of said guide nose, said stepped circumferential groove having a



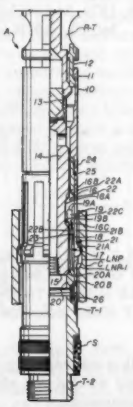
deeper, axially upper portion and a shallower, axially lower portion, said upper wall fitting in mating engagement with said upper portion, and said lower wall extending over substantially the entire width of said lower portion.

4,315,544

LOCKING DEVICE FOR LANDING WITHIN A WELL CONDUIT

Christian K. Monauni, Turriff, Scotland, and Sidney J. Littleford, Dubai, United Arab Emirates, assignors to Baker International Corporation, Orange, Calif.

Filed Jan. 15, 1979, Ser. No. 3,154
Int. Cl.³ E21B *23/02*
U.S. Cl. 166—214 **5 Claims**



1. In an apparatus adaptable to be run within a subterranean well for the setting and locking of a locking module within a complimentary profile of a landing nipple carried on a conduit within the subterranean well, the improvement comprising: longitudinally extending probe means carried by said apparatus at one end thereof; receiving means exteriorly defined on said probe means for selective receipt of a lock control member of a lock control means and for shifting of said lock control member to one of two positions; and means on said apparatus for shifting said lock control member to the other of said two positions while said lock control member is maintained in said receiving means, said lock control means comprising a collet defining at least one flexible finger at one end thereof and a plunger having an abutment thereon at the other end thereof, said plunger being responsively urged by said means on said apparatus for shifting said lock control member to the other of said two positions while said lock control member is maintained in said receiving means.

4,315,545

METHOD OF RECOVERING PETROLEUM FROM A SUBTERRANEAN RESERVOIR INCORPORATING AN ACYLATED POLYETHER POLYOL

Charles M. Blair, Jr., Buena Park, Calif., assignor to Magna Corporation, Santa Fe Springs, Calif.

Continuation of Ser. No. 45,360, Jun. 4, 1979, Pat. No. 4,216,828, which is a continuation-in-part of Ser. No. 917,055, Jun. 19, 1978, abandoned, which is a continuation-in-part of Ser. No. 917,057, Jun. 19, 1978, abandoned. This application Apr. 21, 1980, Ser. No. 142,318
The portion of the term of this patent subsequent to Aug. 12, 1997, has been disclaimed.
Int. Cl.³ E21B *43/22*
U.S. Cl. 166—274 **5 Claims**

1. The method of recovering petroleum from a subterranean reservoir, comprising the steps of: (1) introducing into said reservoir a predeterminable amount of an acylated polyether polyol wherein said polyether polyol has an average molecular weight of about 15,000 or less and is derived from the reaction of an alkylene oxide containing less than about 10 carbon atoms with a member of the group consisting of polyols, amines, polyamines and amino alcohols containing from about 2 to about 10 active hydrogen groups capable of reaction with alkylene oxides, said member having 18 or less carbon atoms, and the acylating agent being a member selected from the class consisting of mono- and polybasic carboxylic acids, acid anhydrides and iso-, diiso-, and polyisocyanates, said acylated polyether polyol, at about 25° C.: (a) being soluble in water and in isooctane to the extent of less than about 1% by volume; (b) having a solubility parameter in the range of between about 6.9 and about 8.5; and (c) spreading at the interface between distilled water and refined mineral oil to form a film having a thickness no greater than about 20 Angstroms at a spreading pressure of about 16 dynes per cm; and (2) contacting said petroleum in said reservoir with an effective thin film forming amount of said acylated polyether polyol.

4,315,546

DOUBLE ROLL ROCK WINDROWER

Harley D. Fahrenholz, Clarissa, Minn.

Filed May 5, 1980, Ser. No. 146,671
Int. Cl.³ A01G *43/00*
U.S. Cl. 171—65 **4 Claims**

1. A windrower for rocks and debris on the ground comprising:

a frame,

a roller assembly comprising first and second rollers having generally parallel axes;

a pair of first arms;

means to mount the first roller on said first arms at trailing ends of the first arms;

means to pivotally mount said first arms to the frame to permit movement of the trailing ends of the arms and the first roller relative to the ground;

a pair of second arms;

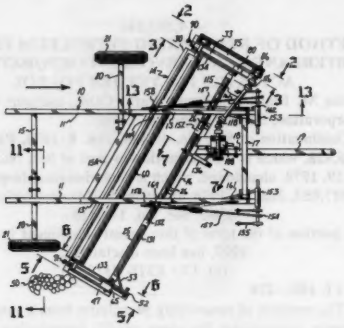
means to pivotally mount the second arms to move with the first arms and being pivoted at locations spaced from the trailing ends of the first arms whereby the first and second rollers may separate;

means to mount said second roller on said second arms at

trailing ends of the second arms in position adjacent to, generally above and substantially parallel to the first roller the second arms permitting the second roller to pivot upwardly relative to the first roller;

means operable between the first and second arms to permit adjustably spacing the rollers relative to each other; and

means to drive the rollers about their axes with the arms positioned to permit the first roller to be contiguous to the ground and the second roller spaced above the ground, said first and second rollers being positioned with their



axis oblique to the direction of travel whereby rocks and the like engaged by the rollers are moved along the rollers and discharged at one end of the rollers;

said rollers being of construction and rotated in the same direction so that the lower edge portion of both rollers tends to impel the rocks in opposite direction to the direction of movement, the peripheries of said rollers being completely spaced from each other during use but preventing materials to be windrowed from passing between the rollers.

4,315,547

AGRICULTURAL ATTACHMENT

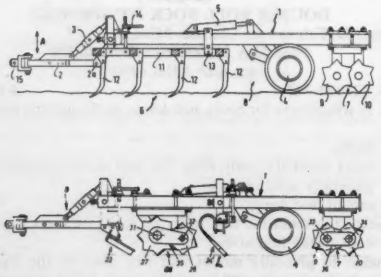
Willy Rau, Weilheim, and Christian Taus, Kirchheim, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Rau GmbH, Weilheim, Fed. Rep. of Germany

Filed Apr. 24, 1979, Ser. No. 32,905

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1978, 2818274; Sep. 27, 1978, 2842037

Int. Cl.³ A01B *49/02, 21/04, 79/00*

U.S. Cl. 172—1 **45 Claims**



1. An attachment for agricultural machines, comprising a frame having a leading portion and a trailing portion; first soil-treating means mounted at said leading portion of said frame; second soil-treating means mounted at said trailing portion of said frame; wheel means mounted on said frame for supporting the latter when an agricultural machine provided with the attachment moves on a road, said wheel means being displaceable between a first position in which they engage the ground and support said frame thereon with said first and second soil-treating means being upwardly spaced from the ground, and a second position in which they do not engage the ground; means for coupling said frame at said leading portion thereof to a lifting drive so that, when said wheel means are in said second position, said trailing portion of the frame is supported on the ground by said second soil-treating means; a separate support mounted on said frame for supporting said first soil-treating means, said support having one end pivotably mounted on said frame and another end operatively connected to said frame so as to pivot said support relative to said frame and about said one end of said support; and means for adjustably connecting said other end of said support to said frame.

36. A method of cultivating soil by an attachment for agricultural machines, which comprises a frame having a leading portion with first soil-treating means and a trailing portion with second soil-treating means, wheel means mounted on the frame and displaceable in the vertical direction and coupling means for coupling the leading portion of the frame to an agricultural machine, the method comprising the steps of displacing the wheel means to a supporting position in which they engage the ground and the first and second soil-treating means are upwardly spaced from the ground so that the attachment can move on a road; displacing the wheel means to a non-supporting position in which they do not engage the ground and the first and second soil-treating means engage the ground so that the first and second soil-treating means can treat the soil; and lifting the leading portion of the frame relative to the coupling means so that said first soil-treating means is lifted from the ground, whereas the trailing portion of the frame is supported on the ground by said second soil-treating means, whereby the attachment can make turns on a field without displacing the wheel means to the supporting position.

4,315,548

TRACTOR WITH A TRACTION LOAD SENSING DEVICE

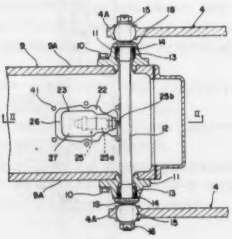
Norimi Nakamura, Sakai; Shigeaki Okuyama, Kawachinagano; Shigekazu Hasegwa, Sakai; Yoshiyuki Katayama, Osaka, and Mituhiko Obe, Sakai, all of Japan, assignors to Kubota, Ltd., Japan

Filed Apr. 24, 1980, Ser. No. 143,933

Claims priority, application Japan, Oct. 1, 1979, 54-136413[U]; Oct. 18, 1979, 54-144534[U]

Int. Cl.³ A01B *63/112*

U.S. Cl. 172—430 **7 Claims**



1. A tractor with a soil-engaging implement and a traction load sensing device needed for effecting regulation of the implement load, comprising:

a transmission case constituting a structural member of the tractor;

a pair of lower links functioning for connecting the said soil-engaging implement to the transmission case;

a sensor bar mounted on the transmission case in such a manner as to show displacement responsive to the implement traction load exerted on the lower links;

a detection device adapted to detect the amount of the dis-

placement of the sensor bar, the detection device being accommodated in and secured to the transmission case in an oil-tight manner, provided, however, with means for allowing access thereto for enabling easy mantling and dismantling thereof from outside the transmission case;

a casing accommodating therein the detection device establishing complete sealing or approximately establishing such state, said detection device comprising a sensor body and a sensor retractably mounted on the sensor body; and

the transmission case having an opening in a floor plate thereof for accommodating the said casing as may be brought in therethrough from outside, and the said case having as one constituent element thereof, a releasable lid for the said opening.

4,315,549

SOIL WORKING MACHINE WITH INTERCONNECTED DISPLACEABLE SUPPORTS WHICH MAINTAIN ORIENTATION

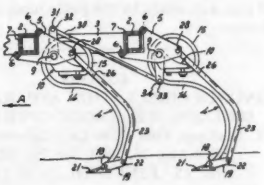
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed May 30, 1979, Ser. No. 43,741

Claims priority, application Netherlands, Jun. 5, 1978, 7806076; Jun. 5, 1978, 7806077

Int. Cl.³ A01B *15/00*

U.S. Cl. 172—657 **11 Claims**



6. A soil working machine comprising a frame and at least two soil working members supported on said frame, said members being positioned one behind the other with respect to the direction of travel, each member comprising a leading support having an upper resilient fastening portion bent through at least 180° and said fastening portion being interconnected to said frame by pivot means, a rigid control-arm having an upper portion pivoted to the frame, said arm being located to the rear of said pivot means, said support and arm extending downwardly to respective pivots to a soil working element, the pivot connections of the support and control arm to the frame and to the soil working element defining a quadrilateral linkage, the supports of said two members being interconnected by a rigid coupling, whereby one support is displaced responsive to the movements of the other support and the respective soil working elements of said members maintain soil working orientation.

4,315,550

SELF-PROPELLED APPARATUS FOR SETTING CEMETERY MARKERS AND THE LIKE

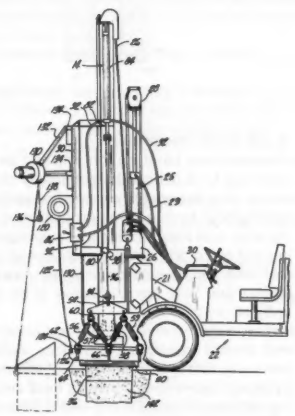
David W. Fulkerson, 8360 W. Six Mile Rd., Northville, Mich. 48167, and Lawrence W. Smith, 26950 Taft Rd., Novi, Mich. 48050

Division of Ser. No. 830,022, Sep. 2, 1977, abandoned, which is a continuation-in-part of Ser. No. 625,141, Oct. 23, 1975, Pat. No. 4,051,684. This application Oct. 16, 1978, Ser. No. 951,578

Int. Cl.³ E02D *7/08*

U.S. Cl. 173—28 **25 Claims**

1. In a combination wheeled unit comprising a self-propelled wheeled vehicle and a vertically upstanding hammer tower carried on said vehicle, said hammer tower having a vertically reciprocal hammer thereon arranged and constructed to provide a generally downwardly directed percussion blow, that improvement especially adapted for driving previously installed cemetery markers downwardly into the ground to be substantially flush with the ground so as to permit a grass mower to pass over said markers with the cutting blade of the mower operating at a normal cutting height, said improvement comprising force transmitting means, mounting means supporting said force transmitting means on said unit for movement relative to said hammer and said hammer tower, said force transmitting means being positionable beneath said hammer over a cemetery marker, said force transmitting means comprising an upper hard, rigid flat surface portion adapted to be impacted by said hammer and a lower flat surface portion that is substantially softer and less rigid than said upper portion for engagement with an upper surface of a cemetery marker, said lower portion being integrally connected with said hard upper portion so as to transmit impact forces from said hammer to a marker positioned beneath said lower portion, said supporting means operatively supporting said force transmitting means independently of said hammer for retractable movement between an operating position wherein the plane of said force transmitting means is arranged generally perpendicular with the path of reciprocable movement of said hammer so that said force transmitting means will be engaged upon downward movement of said hammer, and a non-operating position wherein the plane of said force transmitting means is arranged generally parallel to and spaced laterally away from the path of reciprocable movement of said hammer so that force transmitting means will not be engaged by said hammer upon downward movement thereof.



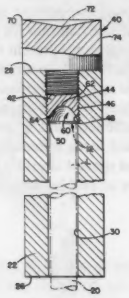
18. In a combination wheeled unit comprising a self-propelled vehicle and a vertically upstanding hammer tower carried on said vehicle, said hammer tower having a vertically reciprocal hammer thereon arranged and constructed to provide a generally downwardly directed percussion blow, the improvement comprising shock-transmitting means, mounting means supporting said shock-transmitting means on said unit for movement relative to said hammer and said hammer tower, said shock-transmitting means being positionable beneath said hammer to engage means to which hammer impact is to be transmitted, said shock-transmitting means comprising an upper hard rigid flat surface portion adapted to be impacted by said hammer and a lower surface portion that is substantially softer and less rigid than said upper portion for engagement with an upper surface of said means to which said impact is to be transmitted, said lower portion being integrally connected with said hard upper portion so as to transmit impact forces from said hammer, said supporting means operatively supporting said shock transmitting means independently of said hammer for retractable movement between an operating position wherein the plane of said shock transmitting means is arranged generally perpendicular with the path of reciprocable move-

ment of said hammer so that said shock transmitting means will be engaged upon downward movement of said hammer, and a non-operating position wherein the plane of said shock transmitting means is arranged generally parallel to and spaced laterally away from the path of reciprocable movement of said hammer so that shock transmitting means will not be engaged by said hammer upon downward movement thereof.

4,315,551
ROD DRIVER

Samuel J. Iannone, 15 W. Willow St., Beacon, N.Y. 12508

Filed Feb. 21, 1980, Ser. No. 123,390
Int. Cl.³ B25C *1/00*
U.S. Cl. 173—128 **2 Claims**



1. A rod driver comprising:

an elongate body having a fore end and an aft end and a rod receiving bore defined longitudinally therethrough;

a driving head threadably mounted on said body aft end, said driving head having a boss projecting into said rod receiving bore, said boss forming a bore covering portion covering said rod receiving bore and a cutout portion defined in said boss, said cutout being curved outwardly of said bore so that said bore has a concave blind end adjacent said body aft end,

whereby, a rod received in said rod receiving bore has one end thereof contacting a surface defining said cutout portion so that any deformation of said rod one end caused by impact between said driving head cutout portion defining surface and said rod one end is controlled by the shape of said cutout portion.

4,315,552
RAISE DRILL APPARATUS

Jack O. Winsor, Seattle, Wash., assignor to Dresser Industries, Inc., Dallas, Tex.

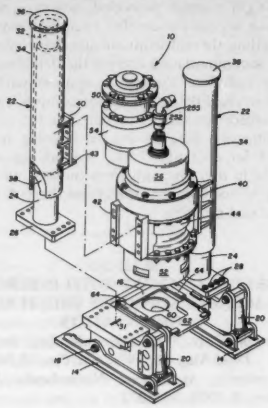
Filed May 14, 1979, Ser. No. 38,754
Int. Cl.³ B23Q *5/027, 5/033*
U.S. Cl. 173—159 **10 Claims**

1. An improved drilling apparatus of the type which includes a ground engaging base, a torque transmitting apparatus for engaging and transmitting torque to drill pipe, and means mounted on the base for moving and guiding said torque transmitting apparatus back and forth along the drill pipe axis, wherein the improvement comprises:

(a) said moving and guiding means comprising two or more hydraulic cylinders connected at one end to the base of the drill apparatus and each having a movable piston rod projecting from its other end and away from the base;

(b) a guide tube surrounding and connected to the outer end of each piston rod, and each tube having an inner surface portion in overlapping sliding engagement with the outer surface portion of its associated cylinder; and

(c) connecting means for rigidly connecting the torque transmitting apparatus between the guide tubes, said torque transmitting apparatus being the only direct connection between the guide tubes, and wherein the torque

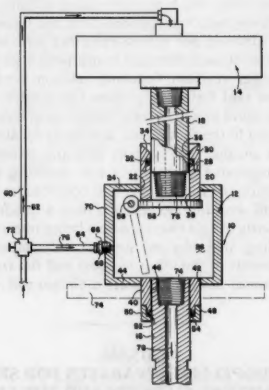


transmitting apparatus is guided back and forth along the drill pipe axis solely by the guide tubes moving along said cylinders.

4,315,553
CONTINUOUS CIRCULATION APPARATUS FOR AIR DRILLING WELL BORE OPERATIONS

Jimmie L. Stallings, 4560 Pinto La., Claremore, Okla. 74017

Filed Aug. 25, 1980, Ser. No. 180,655
Int. Cl.³ E21B *19/00, 21/10, 33/02*
U.S. Cl. 175—207 **6 Claims**



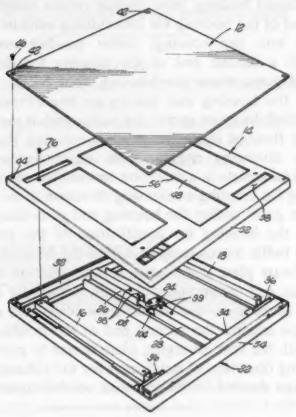
1. Apparatus for maintaining a continuous circulation of an air stream through a drill string during the drilling of a well bore and comprising housing means secured in the proximity of the surface of the well bore for receiving the drill string therethrough, first and second port means provided in the housing in communication with an internal chamber and for receiving the drill string therethrough, said chamber being disposed around the outer periphery of a portion of the drill string during the well drilling operation and isolating the upper end of the drill string from the atmosphere during separation of the drill string upon an interruption of the drilling operation, flapper means pivotally secured in the housing and disposed within the chamber for engagement with one of said port means in the separated position of the drill string to provide said isolation therefor, by-pass means having one end in com-

munication with the air stream and the opposite end in communication with the chamber for directing the air stream into the chamber during said separation of the drill string for direction of the air stream through the drill string during the interruption of the drilling operation, means connected with said by-pass means for selective closing thereof from said air stream whereby the air stream is directed into the drill string remotely from the housing during a continuation of the drilling operation thus providing a continuous circulation of the air stream through the drill string both during the drilling operation and during an interruption of the drilling operation.

4,315,554
SCALE

Glenn E. Williamson, 3912 La Hacienda Dr., San Bernardino, Calif. 92404

Filed Mar. 2, 1979, Ser. No. 17,171
Int. Cl.³ G01G *21/08, 23/14*
U.S. Cl. 177—256 **5 Claims**



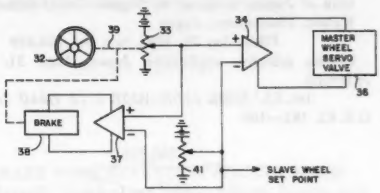
1. A scale comprising:
an arm system movable about and fixedly secured to a fulcrum;
an output detector coupled adjacent to one end of said arm system;
a load structure for positioning an item to be weighed thereon; and
a strain sensor fixedly connected adjacent the other end of said arm system and said load structure, said strain sensor and said fulcrum each being formed of a pad of resilient material, each pad being adhesively and permanently affixed to said arm system and said load structure adjacent surfaces.

4,315,555
ELECTRO-HYDRAULIC STEERING SYSTEM

Renaldo F. Schritt, Bothell, Wash., assignor to Grad-Line, Inc., Woodinville, Wash.

Filed Oct. 22, 1979, Ser. No. 86,782
Int. Cl.³ B62D *5/04*
U.S. Cl. 180—140 **21 Claims**

1. A multi-mode steering system for a vehicle having a plurality of steerable wheels with one of said steerable wheels being a master wheel and the other of said steerable wheels being slave wheels responsive to said master wheel, comprising:
a steering wheel;
control means, responsive to the angular position of said steering wheel, for producing a steering voltage output indicative of the angular position of said steering wheel;
master wheel angle indicator means for producing an output signal indicative of the angular position of said master wheel;
differential amplifier means having first and second inputs, said first input being connected to the output of said master wheel angle indicator means, said second input being connected to said control means for receiving said steering voltage output, the output of said differential amplifier means being proportional to the difference between the output signal of said master wheel angle indicator means and said steering voltage output;

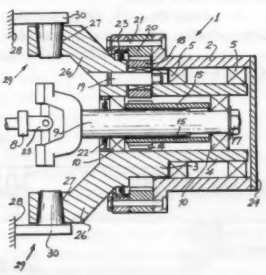


means responsive to the output of said differential amplifier means for applying a braking force to said steering wheel, said braking force progressively increasing as the difference between the output signal of said master wheel angle indicator means and said steering voltage output increases, whereby said braking force controls the rate of change of said steering voltage output;
steering mode select means for selecting a steering mode; and
signal processing means for providing a steering signal to selected slave wheels to turn said selected slave wheels in arcs concentric with the arc of said master wheel.

4,315,556
HUB REDUCTION GEAR UNIT

Seamus G. Timoney, Harvieston, Cunningham Rd., Dalkey, County Dublin, Ireland

Filed Feb. 28, 1980, Ser. No. 125,314
Int. Cl.³ B60K *17/30*; F16H *3/44*
U.S. Cl. 180—255 **8 Claims**



1. A hub reduction gear unit for mounting in a hub of a vehicle to transmit drive from a drive shaft to the hub comprising:
a non-rotating epicyclic planet gear carrier of cast metal cast in a single unitary piece,
a hub axle of cast metal cast integrally in one piece with, and projecting outwardly from, the planet gear carrier and extending into the hub for the rotatable support thereof,
a sun gear shaft coaxial with and rotatable within the planet gear carrier,
a sun gear fast on the sun gear shaft,
planet gears meshing with the sun gear and rotatably mounted on the planet gear carrier,

an annulus gear meshing with the planet gears fast on and coaxial with the hub,

a mounting means on the planet gear carrier to connect the carrier to the vehicle, and

a connecting means on the sun gear shaft to connect the sun gear shaft to the drive shaft.

4,315,557

DIAPHRAGM FOR ELECTRO-ACOUSTIC TRANSDUCER

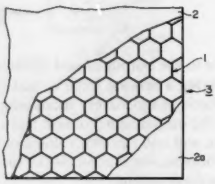
Takao Nakaya, Hamamatsu, and Akira Nakamura, Shizuoka, both of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed May 29, 1980, Ser. No. 154,459

Claims priority, application Japan, May 31, 1979, 54-73389[U]

Int. Cl.³ G10K *13/00*; B32B *3/12*; H04R *7/10*

U.S. Cl. 181—168 **11 Claims**



1. An electro-acoustic transducer diaphragm comprising:

a cellular core member formed of a metal foil and having a honeycomb structure;

a skin member disposed on and bonded to each side of said cellular core member, said skin member being composed of aromatic polyamide fibers impregnated with a set thermo-setting resin; and

a bonding agent for bonding said skin member to said cellular core member.

4,315,558

BELLOWS TYPE EXHAUST TUBE

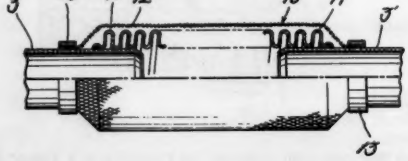
Kakuji Katayama, Ibara, Japan, assignor to Katayama Kogyo Co., Ltd., Ibara, Japan

Filed Dec. 19, 1979, Ser. No. 105,039

Claims priority, application Japan, Nov. 1, 1979, 54-131749

Int. Cl.³ F01N *1/08*, *7/08*

U.S. Cl. 181—227 **8 Claims**



1. A bellows type acoustic energy attenuating exhaust tube for use in the exhaust system of a vehicular internal combustion engine comprising a spiral, multi-layered flexible bellows including a plurality of partially overlapping coaxial thin stainless steel web layers and connected at the opposite ends to communication pipes which connect said exhaust tube to the remainder of said exhaust system; means to prevent excessive expansion of said bellows surrounding said spiral, multi-layered bellows in outwardly radial spaced relationship to the bellows; and retainer rings for securing the opposed ends of said preventive means to said communication pipes.

4,315,559

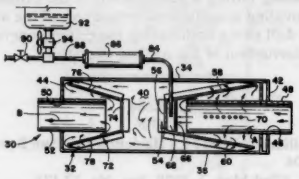
MUFFLER FOR INTERNAL COMBUSTION ENGINE

Russell A. Casey, 1010 E. Thompson St., Sapulpa, Okla. 74066

Continuation-in-part of Ser. No. 862,102, Dec. 9, 1977, abandoned. This application Mar. 19, 1980, Ser. No. 131,746

Int. Cl.³ F01N *1/08*, *3/04*

U.S. Cl. 181—265 **9 Claims**



1. A muffler for an internal combustion engine and comprising a closed housing, inlet conduit means extending through a first end of the housing for introducing exhaust gases from the engine into the housing, outlet conduit means extending through a second end of the housing for discharge of the exhaust gases from the housing, first baffle means secured within the housing and having an imperforate plate spaced inboard of the inner end of the inlet conduit means for deflecting the flow of the exhaust gases entering the housing, outwardly diverging angular plate means extending from the imperforate plate in a direction toward the said first end of the housing for creating a reversing direction of movement for the exhaust gases within the housing and providing alcove means within the housing for equalization of the pressure therein, second baffle means secured within the housing and having an imperforate plate disposed in spaced relation with respect to the inner end of the outlet conduit, outwardly diverging plate means secured to the imperforate plate and extending in a direction toward the second end of the housing for cooperation with the first diverging plate means to provide additional reversing direction of movement for the exhaust gases prior to discharge thereof from the outlet conduit means.

4,315,560

SILENCER FOR AIRCRAFT PISTON ENGINE

Philipp E. Stauch, deceased, late of Neunkirchen, Fed. Rep. of Germany; by Thea Stauch, heir, Homburger Str. 51, 6680 Neunkirchen, and by Dieter Stauch, heir, Hauptstrasse 72, 6661 Saarbrücken-Klarenthal, both of Fed. Rep. of Germany

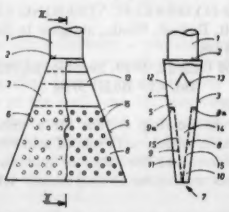
PCT No. PCT/DE79/00124, § 371 Date Jun. 21, 1980, § 102(e) Date Jun. 18, 1980, PCT Pub. No. WO80/00861, PCT Pub. Date May 1, 1980

PCT Filed Oct. 22, 1979, Ser. No. 224,226

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1978, 2845902

Int. Cl.³ F01N *7/20*, *1/08*

U.S. Cl. 181—275 **8 Claims**



1. Silencer for aircraft piston engines having inner perforated metal sheets and at least one tubular joining sleeve for connecting to an exhaust gas conduit comprising:

(a) a rectangular cross section with a configuration varying in the flow direction in which the forward and rearward

outer sheets associated with the long sides of the rectangle converge in the flow direction towards each other down to a slot like outlet opening and the lateral terminal sheets associated with the shorter sides of the rectangle diverge in the flow direction toward each other to the slot like outlet opening,

(b) converging perforated sleeves extending parallel to and at a distance from the converging forward and rearward outer sheets and provided with bevelled portions on the inflow side and converging to the outer sheets so that each perforated sheet forms with a bevelled portion, a forward or rearward outer sheet, and regions of the lateral diverging terminal sheets a cooling chamber which is open and terminates in the slot like outlet opening,

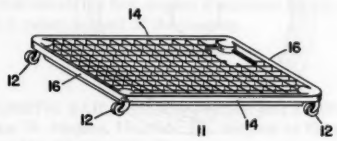
(c) a cooling chamber receiving the exhaust gases from the narrowing intermediate chamber between the converging perforated sheets over their holes and allowing them to escape in the region of the slot like outlet opening, wherein the exhaust gases after their deviation into the cooling chambers pass along the outer and lateral terminal sheets which are contacted by the propeller wind.

4,315,561

DRAIN PAN FOR RADIATORS AND COOLING SYSTEMS

Joshua J. Partridge, 4020 Harlan St., Emeryville, Calif. 94608

Filed Dec. 17, 1979, Ser. No. 104,009
Int. Cl.³ F16N *31/00*; B65D *1/24*
U.S. Cl. 184—106 **8 Claims**



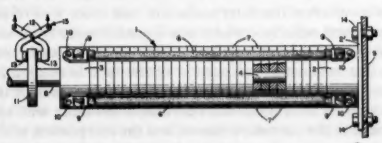
1. A drain receptacle for receiving effluent from a vehicle, comprising a pan having a base panel, a plurality of side walls extending upwardly from the perimeter of said base panel and formed integrally therewith, said side walls extending continuously about said base panel and defining therewith an upwardly opening coffer, at least one of said side walls including a shoulder extending into said coffer and disposed in longitudinal fashion along said side wall, lattice means disposed in said coffer for attenuating and arresting wave motion in and spattering from liquid contained in said coffer, said lattice means including at least one edge impinging on and supported by said shoulder, said base panel including a plurality of corners and a plurality of upwardly extending concave wall members, each disposed at one of said corners and extending between the sidewalls converging thereat.

4,315,562

ENERGY ACCUMULATOR

Giorgio Tangorra, and Lino Magnabosco, both of Milan, Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Filed Feb. 12, 1980, Ser. No. 120,831
Claims priority, application Italy, Feb. 23, 1979, 20449 A/79
Int. Cl.³ F03G *1/04*
U.S. Cl. 185—37 **3 Claims**



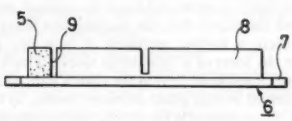
1. A device comprising deformable members for storing mechanical energy developed as the members are stretched and for releasing the stored energy as the members recover from the stretching, said device comprising a substantially cylindrical rigid body member having opposite ends, a rigid metallic bar extending longitudinally through the body member, at least one rubber strip attached by hinge means to each of said opposite ends, wound helicoidally about the body member and spanning the space between the points of attachment to said body member, one of said opposite ends of the said body member being rotatably mounted on said bar to wind the said rubber strip about the body member under tension.

4,315,563

DISC BRAKE FOR PREVENTING SQUEAK NOISE

Hideyuki Hayashi, Mishima, and Shigeru Okuma, Susono, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 873,860, Jan. 31, 1978, abandoned, which is a continuation of Ser. No. 723,953, Sep. 16, 1976, abandoned. This application Jun. 6, 1979, Ser. No. 46,193
Claims priority, application Japan, Jan. 19, 1976, 51-03414[U]
Int. Cl.³ F16D *65/40*
U.S. Cl. 188—73.1 **5 Claims**



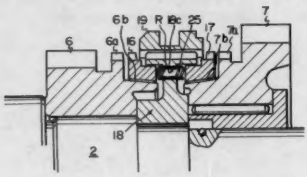
1. In a disc brake assembly including a substantially flat, rotatable disc having two oppositely facing flat side surfaces, two substantially flat friction pad assemblies each facing a respective one of said flat side surfaces of said disc and adapted to frictionally engage the flat side surfaces of said disc and means for urging said friction pad assemblies against said flat side surfaces of said disc, the improvement wherein said friction pad assemblies comprise a pair of spacedly opposed metal linings each one of which has an enlarged mounting surface bounded by a periphery, each said mounting surface being positioned in spaced opposition to one of said flat side surfaces of said disc, pad lining means secured to said enlarge mounting surface of each said metal lining completely within the periphery thereof and in contactable opposition to said flat side surfaces of said disc, said pad lining means including an elongated side edge positioned substantially radially with respect to the rotational axis of said disc and a dust removal member rigidly mounted directly on each said metal lining on the same mounting surface thereof as said pad lining means whereby said pad lining means and said dust removal members have contiguous surfaces in contact with said flat side surfaces of said disc, each said dust removal member being contained completely within and proximate a portion of the periphery of said metal linings, said dust removal member having a wear resistance equal to or less than that of said pad lining means and being completely supported by said mounting surface of said respective metal lining, each said dust removal member including an elongated, substantially radially oriented side edge located adjacent said side edge of said pad lining means and in spaced relation therewith so as to define a substantially radially arranged, elongated space therebetween, whereby dust is removed by said removal members from said flat side surfaces of said disc as long as said pad lining means of said friction pad assemblies engage said flat side surfaces of said disc as said disc rotates.

4,315,564

SYNCHRO-MESH TYPE GEAR TRANSMISSION

Akio Numazawa, Nagoya, and Nobuaki Katayama, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Nov. 7, 1979, Ser. No. 92,218
Claims priority, application Japan, Nov. 15, 1978, 53/156044
Int. Cl.³ F16D *23/04*
U.S. Cl. 192—53 F 7 Claims



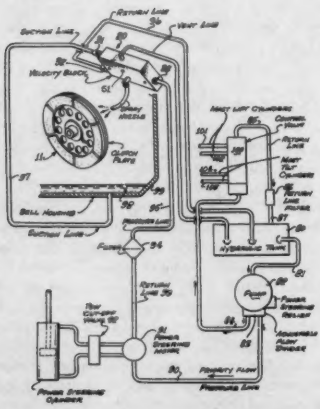
1. A synchro-mesh gear transmission of the type having a clutch hub which is rigidly mounted on an output power shaft, the clutch hub being provided with axial slots in which springs are axially inserted, the springs being arranged so as to urge a synchronizer ring against a conically tapered surface of a driven shift gear, the driven shift gear being mounted on the output power shaft so as to be rotatable with respect to the output power shaft, the synchronizer ring thereby exerting a frictional resistance against rotation of the driven shift gear, the driven shift gear being selectively coupled to the clutch hub by a sleeve member which is in constant meshing engagement with the clutch hub, the transmission being characterized in that there is further provided at least one guide member means in the form of a cylindrical sleeve which is held immobile in one of the axial slots in the clutch hub, one of the springs being inserted in said guide member means, so that said guide member means supports the spring therein against deformation in response to a rotational motion of the sychronizer ring.

4,315,565

SCAVENGE PUMP

Leonard J. Low, P.O. Box 1927, Sparks, Nev. 89431

Filed Aug. 31, 1978, Ser. No. 938,637
Int. Cl.³ F16D *13/74*
U.S. Cl. 192—113 B 10 Claims



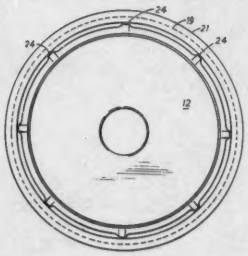
1. The method for removing oil from the crankcase of a vehicle comprising: (1) passing oil from an hydraulically operated apparatus cooperative with said vehicle through a device for increasing velocity and creating suction within a chamber; (2) connecting said chamber to said crankcase in such manner that the oil in the crankcase is drawn into the chamber by reason of the suction in the chamber; and (3) passing the oil from said chamber and said hydraulically operated apparatus into an oil reservoir.

4,315,566

END CAP ASSEMBLIES FOR CONVEYOR ROLLERS

Brian Greener, Welwyn Garden City, and Simon J. Pedder, Luton, both of England, assignors to SKF (U.K.) Limited, Bedfordshire, England

Filed Mar. 10, 1980, Ser. No. 128,892
Claims priority, application United Kingdom, Mar. 9, 1979, 08393/79
Int. Cl.³ B65G *39/09;* F16C *13/02*
U.S. Cl. 193—37 4 Claims

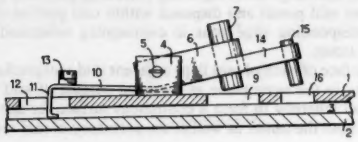


1. An end cap assembly for a roller tube of a conveyor roller, comprising a housing of plastics material and a bearing supported in said housing for rotatably mounting the roller on a fixed shaft, said housing comprising an annular frame and a resilient collar surrounding the frame, said frame having an axially extending inner wall, an axially extending outer wall, and a plurality of radial webs spaced around said frame and extending between said inner and outer walls thereof so as to provide a substantially rigid structure to said frame in which a load acting on the outer wall thereof is transmitted through said webs and distributed substantially evenly along the inner wall, said bearing being mounted as a force fit in the bore defined by said inner wall of the frame, and said collar having an end thereof integral with one end of said outer wall of the frame with the remainder of the collar spaced radially from the outer wall of the frame and movable radially inwards against its own resilient resistance to deformation into abutting contact with said outer wall of the frame, said collar being formed at the free end thereof with an outwardly projecting radial flange, whereby, upon mounting the end cap assembly in an end of a roller tube of a size to receive the collar as a close sliding fit, with the radial flange abutting the end of the roller tube, the end of the roller tube is swageable radially inwards to force the collar into abutting engagement with the outer wall of the frame so as to secure the end cap assembly firmly in the roller tube, wherein the outer surface of said outer wall of the frame is curved radially inwards in a direction away from said one end thereof over at least part of the length of said outer wall so that, when the end portion of the tube is swaged inwards to force the collar against the rigid frame, part of the collar lies along the curved outer surface of the outer wall and is deformed to the curvature thereof and the end portion of the roller tube lies along the curved collar and is deformed to the curvature thereof.

4,315,567
APPARATUS AND METHOD FOR SELECTING FROM COINS OR TOKENS

Lucien M. A. Pipaud, St Nicolas de Redon, France, assignor to Societe de Recherches et de Perfectionnements Industriels et Etablissements H. Morin-Secretan, Cachan, France

Filed Jul. 1, 1980, Ser. No. 165,047
Claims priority, application France, Jul. 13, 1979, 79 18225
Int. Cl.³ G07F *3/02*
U.S. Cl. 194—101 6 Claims

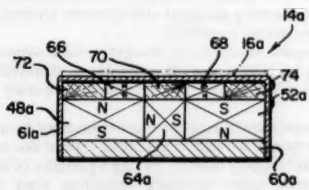


1. In apparatus for rejecting from coins or tokens those whose magnetic characteristic exceeds a prescribed threshold, said apparatus comprising a path for the coins having an opening in which a first magnet engages when a magnetic coin passes along the path opposite the opening and, upstream of the first magnet, a second magnet, the improvement that the magnets are carried by an integral mounting means and are separate pole pieces and the second magnet is shaped or positioned so that the magnetic force with which it is attracted by a magnetic coin passing in front of it along the path is less than that with which the first magnet is attracted by this same coin when it passes in front of the opening.

4,315,568
MAGNETIC RAIL FOR MAGNETIC BELT CONVEYOR

Wallace W. Mojden, Hinsdale, Ill., assignor to Fleetwood Systems, Inc., Countryside, Ill.

Filed May 2, 1980, Ser. No. 146,151
Int. Cl.³ B65G *15/58*
U.S. Cl. 198—690 6 Claims

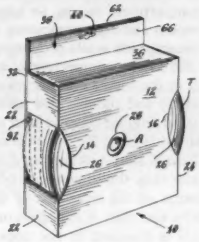


1. A magnetic rail arrangement for use in a conveyor system comprising: a first elongate permanent magnet means arranged to display north polarity to a traveling conveyor means; a second elongate permanent magnet means spaced laterally from said first permanent magnet means and arranged to display south polarity to the traveling conveyor means; and bucking magnet means disposed transversely of and interjacent to said first and second permanent magnet means for preventing flux leakage, and magnetic elements of comparatively larger magnetic moment per unit volume than the first and second magnet means, and are disposed between the traveling conveyor means and said first and second permanent magnet means the magnetic element engaged with said first and second magnet means being in surface-to-surface contact therewith and being of substantially smaller width with respect to the surface portions facing said conveyor means, and also oriented to present similar polarities to said conveyor means, thereby to concentrate the lines of magnetic flux.

4,315,569
REPLACEMENT WHEEL DISPLAY CARTON

Harold R. Jaeschke, Milwaukee, Wis., assignor to Champion International Corporation, Stamford, Conn.

Filed Jul. 14, 1980, Ser. No. 167,994
Int. Cl.³ B65D *25/54, 85/06*
U.S. Cl. 206—45.31 13 Claims

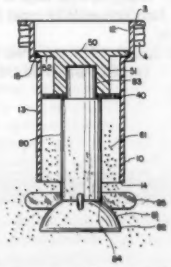


1. A carton construction comprising:
a front wall panel,
a rear wall panel,
a top and bottom wall panel connecting said front and rear wall panels, and
a first and second sidewall panel connected to opposite side edges, respectively, of said fron wall panel,
a centrally located opening in each of said first and second sidewall panels permitting the display of an article housed within said carton construction,
each of said sidewall panels also including
a tuck end panel received within the interior of said carton adjacent to said rear wall panel to retain said article within the interior of said carton construction, and
a tuck lock flap foldably connected to opposite edges of said rear wall panel insertable into the interior of said carton construction through the opening in each of said first and second side walls to overlie one of said tuck end panels to preclude removal thereof fron the interior of said carton construction.

4,315,570
TWO-COMPARTMENT CONTAINER WITH MEANS FOR DISPERSING CONTENTS OF ONE COMPARTMENT INTO THE OTHER COMPARTMENT

Jules Silver, Box 1188, Norwich, Conn. 06360, and Thomas J. Vaiciulis, East Woodstock, Conn. 06244

Continuation-in-part of Ser. No. 919, Jan. 4, 1979, abandoned. This application Dec. 26, 1979, Ser. No. 107,165
Int. Cl.³ B65D *25/08*
U.S. Cl. 206—221 14 Claims



1. A two-compartment container suitable for more uniformly dispersing solid components in an upper compartment

into liquid contents of a lower mixing compartment comprising:

(a) a lower mixing compartment having a bottom, side walls and an open top and having a volume capable of receiving and mixing the contents of the upper and lower compartments;

(b) a closure means for closing the open top of the lower compartment in a liquid-tight manner;

(c) an upper compartment having an upper end disposed in the closure means and communicating with an aperture in the closure means, side walls projecting from the closure means into the lower compartment, and an open lower end disposed in the lower compartment;

(d) a lower flexible and slidable seal means having a downwardly disposed angular flexible skirt contacting a perimeter side wall portion of the upper compartment near the lower end thereof, said skirt having dimensions which are slightly greater than the dimensions of the corresponding inside dimension of the sidewalls of the upper compartment, whereby the skirt is slightly compressed inwardly when the seal is disposed in the upper compartment to effect a slidable liquid-tight seal between the upper compartment and the lower compartment, and said lower seal means being exitable from the open lower end of the upper compartment;

(e) a mechanical linking means connected to the lower seal means and extending through the upper compartment and into the aperture in the closure means for mechanically transmitting a direct downwardly digitally powered movement to the lower slidable seal means, said downward movement being sufficient in length to exit that seal means out of the lower end of the upper compartment but not sufficient in length to allow the linking means or lower seal means to fall out of the upper compartment and into the lower compartment;

(f) an upper slidable seal means disposed around the said linking means and contacting a perimeter side wall portion of the upper compartment near the upper end thereof, whereby an upper chamber for holding the contents of the upper compartment is formed between said lower and said upper seal means and the walls of the upper compartment; and

(g) a positive stop means for abruptly stopping the downward movement of the mechanical linking means and, hence, the lower seal means;

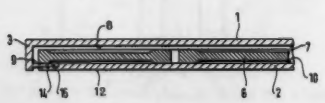
wherein the linking means may be quickly and directly digitally depressed, the lower seal means quickly exits from the lower end of the upper compartment, the contents in the chamber of the upper compartment quickly project from, and at least in part, abruptly impinge upon and deflect from the lower seal means and skirt, whereby the contents of the upper compartment are more uniformly dispersed into the contents of the lower compartment.

4,315,571

SLEEVE FOR GRAMOPHONE RECORDS

Friedrich A. Danne, Cologne, Fed. Rep. of Germany, assignor to "Octropa" B.V. Internationale Octrooi Maatschappij, Rotterdam, Netherlands

Filed Jun. 9, 1978, Ser. No. 914,170
Int. Cl.³ B65D *85/30*
U.S. Cl. 206—312 **4 Claims**



1. A sleeve for a phonograph record or the like, including:

front and back spaced apart, generally parallel panels forming a receptacle area therebetween for receiving said record therein,

said panels including first and second spaced pairs of laterally extending opposed edge zones,

each of said edge zones of said back panel including portions adjacent said receptacle area having a thickness less than the thickness of central areas of said back panel; and

a pair of connecting strips respectively extending between said first and second pairs of said edge zones for inter-connecting said panels,

each of said strips including a flap extending generally parallel to said panels and disposed within said portion of the corresponding edge zone in overlapping relationship to the latter,

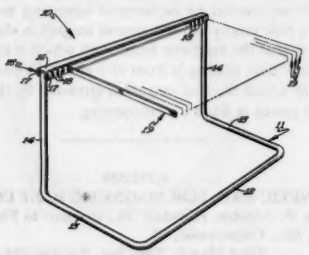
the surface of each of said flaps adjacent said receptacle area lying in the same plane as the inner surface of said back panel whereby to form a continuous surface for supporting both the center as well as the periphery of said record.

4,315,572

PERIODICAL SUPPORT AND RETRIEVAL DEVICE

David H. Clare, Box 50, Rte. 1, Eau Galle, Wis. 54737

Filed Apr. 28, 1980, Ser. No. 144,550
Int. Cl.³ A47F *7/16*
U.S. Cl. 211—45 **3 Claims**



1. A support and retrieval device for periodicals, such as magazines, newspapers and the like, comprising:

a U-shaped base including an elongate, central element having a pair of substantially elongage side elements integral therewith and projecting therefrom,

a pair of elongate, substantially straight vertical support elements each having one end thereof integral therewith with one of said side elements and projecting upwardly therefrom,

an elongate substantially straight support member having opposite ends thereof secured to the upper ends of said vertical elements, said support member having a plurality of longitudinally spaced apart vertically extending slots therein throughout the length thereof,

a plurality of elongate, substantially flat identical support elements each having one end thereof frictionally engaged in one of said slots in the support member and projecting therefrom, said support elements adapted to support periodicals such as magazines or newspapers therefrom and thereby permitting ready retrieval of such periodicals.

4,315,573

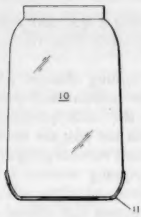
METHOD OF STRENGTHENING GLASS CONTAINERS AND ARTICLES SO MADE

Ronald W. Bradley; David G. Carl, both of Sylvania, and Bernard L. Keating, Toledo, all of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 6, 1980, Ser. No. 194,188
Int. Cl.³ A61J *9/00*; A65D *23/08*
U.S. Cl. 215—12 R **14 Claims**

1. The method of increasing the effective strength of a soda-lime glass container for its use in heating contents comprising

the step of surrounding the heel and bearing surfaces of said glass container with a thin imperforate frangible coating of a thermoset polymeric resin having a thickness ranging from about 1 to 5 mils said coating making said container thermal shock-resistant and being non-fragment retentive upon breakage of said container.



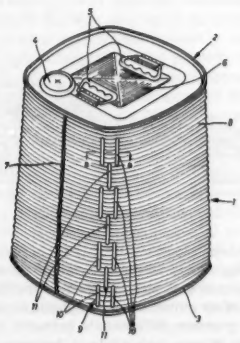
9. A thermal shock-resistant soda-lime glass container adapted to heating contents therein comprising a hollow glass container having a wide-mouth and generally-cylindrical sidewalls and a thin imperforate frangible coating of a thermoset polymeric over at least the heel and bearing surfaces of said glass container, said coating having a thickness ranging from about 1 to 5 mils said coating being rupturable and substantially non-fragment retentive upon breakage of said container.

4,315,574

CONTAINER HAVING CIRCUMFERENTIAL AND LONGITUDINAL STIFFENING CORRUGATIONS

Arnold Forny, Gwatt; Jakob Koch, Hünibach; Hans Niederer, Oberwichtrach, and Otto Schmid, Hünibach, all of Switzerland, assignors to Gebr. Hoffmann AG, Switzerland

Filed Jan. 28, 1980, Ser. No. 115,891
Claims priority, application Switzerland, Feb. 1, 1979, 994/79
Int. Cl.³ B65D *8/12*
U.S. Cl. 220—72 **13 Claims**



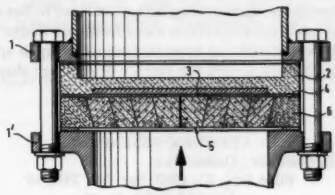
1. An improved container of a thin-walled material of the type having an elongated body with a longitudinal axis and a circumferentially extending wall, the body having first stiffening corrugations extending in its circumferential direction and second stiffening corrugations extending at least approximately in its longitudinal direction, the improvement comprising the first stiffening corrugations having circumferential discontinuities, said discontinuities arranged to define a longitudinal path the second stiffening corrugations longitudinally extending in said path in side by side groups staggered relative to each other in the longitudinal direction, and the second stiffening corrugations extending at spaced intervals at least along a larger part of the height of the body.

4,315,575

VACUUM SUPPORT FOR BURST PROTECTION DEVICE

Erwin Schwarz, Meitingen, and Adolf Swozil, Kühlenthal, both of Fed. Rep. of Germany, assignors to Sigri Elektrographit Gesellschaft mit beschrankter Haftung, Meitingen bei Augsburg, Fed. Rep. of Germany

Filed May 28, 1980, Ser. No. 153,901
Int. Cl.³ B65D *25/00*
U.S. Cl. 220—89 A **2 Claims**



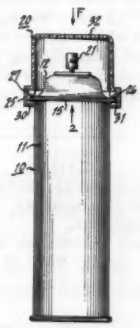
1. Vacuum support for a burst protection device of graphite, comprising a graphite disc formed by a multiplicity of graphite rings, each of which consists of at least two parts and has a prismatic cross section, the prism surfaces being inclined relative to the plane of the disc, with opposite prism surfaces having inclinations different from each other restricting movement of the parts in a direction away from the burst protection device.

4,315,576

CHILD RESISTANT CLOSURE CAP APPARATUS EMPLOYING FULCRUM ACTION

Joseph E. Murphy, Basking Ridge, and Frank Piceno, Jr., Minehill, both of N.J., assignors to Gilbert Plastics, Inc., Somerset, N.J.

Filed Jun. 12, 1980, Ser. No. 158,830
Int. Cl.³ B65D *41/18*
U.S. Cl. 220—282 **10 Claims**



1. A child resistant closure cap apparatus for covering a container having a top peripheral flange surrounding the same at a substance removal end, said closure cap comprising:

a relatively hollow cup shaped member having a closed top surface and an opened bottom, said cup shaped member having a plurality of fulcrum members located about the inner peripheral wall of said cup member and adapted to coact with the top surface of said flange when said cap is emplaced upon said container, a plurality of undercut projections each associated with and located beneath one of said fulcrum members and positioned below said flange when said cap is emplaced with each of said undercut projections having a tapered cross section being thickest near said peripheral wall and sloping downwardly be-

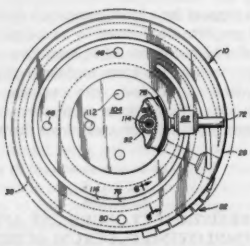
neath said flange to allow said undercut projection to flex upon application of an activating force, with an additional undercut projection positioned between at least two of said fulcrum members and located in the same plane as said other projections, with said projections operating to secure said cap when emplaced upon said container, with said additional undercut member adapted to receive a activating force imparted above the same to the closed top surface of said cup member to cause at least two of said fulcrum members to respond to said force to flex and pivot said undercut projections away from said flange to enable removal of said cap from said container upon application of said force to said top surface of said cup shaped cap.

4,315,577

CLOSURE ASSEMBLY

Albert Bernson, Jr., Dallas, Tex.

Filed Dec. 22, 1980, Ser. No. 219,349
Int. Cl.³ B65D *45/28*
U.S. Cl. 220—323 **14 Claims**



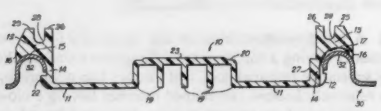
1. A closure assembly, comprising: a closure body adapted to extend into an opening in a structure, said closure body having a spirally disposed groove formed therein; a retaining member made to be flexible when moved through the spirally disposed groove; and means operably connected to said closure body for moving said retaining member through the groove to a position where a portion of said retaining member engages the structure, said retaining member being made of sufficient size and material to resist any shear forces provided thereto when said closure body is mounted within the opening into said structure.

4,315,578

SAFETY CLOSURE CAP WITH VENT

Clifford J. Ludwig, Jr., Southgate, Ky., assignor to The Drackett Company, Cincinnati, Ohio

Filed Sep. 17, 1980, Ser. No. 187,924
Int. Cl.³ B65D *83/10*
U.S. Cl. 220—366 **8 Claims**



1. A safety closure cap for enclosing an orifice in a container comprised of:

(a) a disc portion;

(b) a retaining lip portion extending along the edges of the disc and surrounding the periphery thereof;

(c) an annular ring portion disposed in a plane parallel to the disc and having an annular groove formed on its lower side for mating with the opening of the vessel intended to be enclosed;

(d) a short annular wall portion which connects the annular ring with the lip of the disc;

(e) an annular sealing skirt portion which extends generally outwardly and downwardly from the periphery of the annular ring portion and being adapted to contact the edge of said orifice in a substantially overlapping configuration;

(f) a pull tab having a free end with upper and lower surfaces, which extends from the periphery of the annular ring;

(g) at least one venting channel which extends across the periphery of the annular wall portion from the retaining lip portion to the outer periphery of the annular ring portion until but not past the sealing skirt portion; and

(h) a first and second vertical gripping member, wherein said first vertical gripping member is disposed along the periphery of the free end of the pull tab on the upper surface thereof, and wherein said second vertical gripping member is disposed along the periphery of the free end of the pull tab on the lower surface thereof,

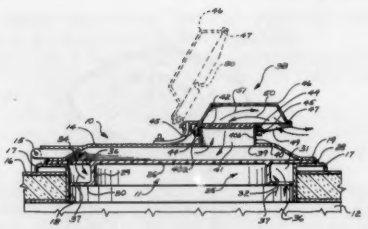
whereby said substantially overlapping configuration substantially prevents the ambient atmosphere from being in communication with the interior of the container when the pressure within the container is substantially equal to or less than that of the ambient atmosphere and whereby said skirt is flexed away from said substantially overlapping relation when the pressure in the interior exceeds a predetermined value and is released through said venting channel and through said sealing skirt into the atmosphere.

4,315,579

VENTING AND FILTERING MECHANISM FOR MILK TANK VENT

Timothy J. Martin, Jr., 1328 Pangborn Rd., Lynden, Wash. 98264

Filed Dec. 17, 1979, Ser. No. 104,091
Int. Cl.³ B65D *51/16, 51/18*
U.S. Cl. 220—371 **19 Claims**



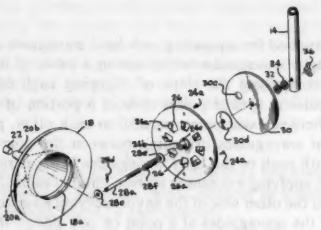
1. An improved closure assembly for selectively permitting and precluding access to the interior of an enclosed storage tank through an access opening formed therein while permitting freedom of air movement through the access opening so as to minimize pressure differentials between the interior and exterior of the storage tank while at the same time precluding movement of airborne contaminants therethrough, comprising, in combination: a closure member; means for securing said closure member to the storage tank in overlying relation to the access opening formed therein; means defining a vertical opening extending through said closure member; a tubular upstanding wall integral with said closure member and surrounding the vertical opening formed therein; a sheet of fluid pervious filter material removably secured to said closure member extending entirely across the opening formed therein and in face-to-face engagement with the uppermost edge of said tubular upstanding wall throughout the entire perimeter thereof; a dome-shaped cover seated on said tubular upstanding wall, said dome-shaped cover (a) projecting beyond said tubular upstanding wall on one side thereof so as to form a down-

wardly facing vent communicating between the interior of said dome-shaped cover and the exterior of the storage tank and (b) contacting said sheet of filter material on the remaining three sides of said upstanding wall for securely clamping said filter material between said upstanding wall and said dome-shaped cover on said three sides; said dome-shaped cover, downwardly facing vent, vertical opening and upstanding wall defining a tortuous flow path; and, means for pivotally securing said dome-shaped cover to said closure member so that air moving between the interior and exterior of the storage tank in response to pressure differentials therebetween is required to pass through both said tortuous path and said sheet of filter material, thereby effectively precluding ingress of contaminants into the interior of the storage tank and minimizing pressure differentials between the interior and exterior thereof.

4,315,580
HAND HELD SEED PLANTER WITH ROLLER WHEEL STRUCTURE

James K. Beckworth, 904 Penn Waller Rd., Savannah, Ga. 31410

Filed Aug. 15, 1980, Ser. No. 178,364
Int. Cl.³ A01C *7/02*
U.S. Cl. 221—185 **10 Claims**

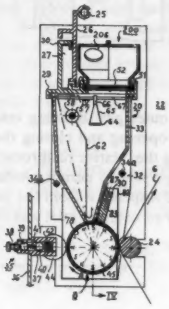


1. A row seed planter for planting seeds in a prepared furrow in home gardens and the like, comprising a ground-engaging wheel-like seed reservoir and dispenser rotatable subassembly, an elongated handle member adapted to be hand-grasped near an upper end thereof and extend upwardly and rearwardly from the rotatable subassembly and provide rotary journal support therefor, the rotatable subassembly comprising a rigid flat annular ground-engaging disc member having a large diameter center hole there-through, a seed housing shell structure encircling said axis along a circular cross-section path concentric with said axis joined to and extending from one side of said ground-engaging disc member defining a seed chamber of predetermined capacity communicating with said center hole and having a removable closure covered fill opening at an end portion thereof spaced from said disc member, a seed elevating disc fixed to the opposite side of said ground-engaging disc member from said seed chamber forming an opposite side closure wall for said center hole, and having an apertured center bushing, a horizontal center shaft rotatably journaled in said bushing and having a threaded portion projecting from said seed elevating disc through and journaled in the lower end portion of said handle member, a single apertured seed discharge disc plate concentric with said axis mounted closely adjacent said seed elevating disc on the threaded portion of said shaft and restrained against rotation relative to said handle member to locate the aperture therein as a seed discharge opening at a predetermined level above the lowermost portion of said chamber, and said seed elevating disc having a plurality of seed transfer openings therethrough bounded along trailing edges thereof by inclined lift tabs projecting into said chamber and located in circumferentially spaced relation along a circular path registering with said seed discharge opening to lift seeds from the lowermost zone of said chamber to said discharge opening for single-seed discharge therethrough at spaced intervals along the furrow as the planter is rolled therealong.

4,315,581
HOLDER FOR ELECTROGRAPHIC DEVELOPING POWDER

Hendrikus J. J. Van Soest, and Peter M. W. Mennen, both of Helden, Netherlands, assignors to Oce-Nederland B.V., Venlo, Netherlands

Filed Mar. 26, 1980, Ser. No. 134,190
Claims priority, application Netherlands, Mar. 27, 1979, 7902361
Int. Cl.³ B67B *7/24*
U.S. Cl. 222—83 **16 Claims**



1. In a holder for electrographic developing powder, including a chamber for the powder having an oblong powder outlet opening closed powdertight by a membrane attached thereover, a slide valve movable between first and second positions respectively for closing off and uncovering said opening and means for positioning said holder above a developing powder reservoir of an electrographic apparatus for delivery of powder from the holder into the reservoir;

the improvement wherein said holder comprises guide means along said opening for guiding said slide valve between its said positions and said slide valve has cutting means mounted thereon near an end thereof, said cutting means being operative as said slide valve is moved from said first position to said second position to cut open along said opening a section of a membrane closing said opening.

4,315,582
UNIVERSAL SEQUENTIAL DISPENSING PUMP SYSTEM FREE OF EXTERNAL CHECK VALVES AND HAVING VENTING CAPABILITY

Lewis A. Micallef, Fort Lee, N.J., assignor to Leeds and Micallef, Fort Lee, N.J.

Filed Apr. 24, 1978, Ser. No. 899,268
Claims priority, application United Kingdom, May 2, 1977, 18367/77
Int. Cl.³ B67D *5/42*
U.S. Cl. 222—148 **83 Claims**

1. A dispensing pump system for dispensing product from a container, the pump serving as a container closure, comprising:

an outer part;

an inner part in the outer part defining a pump chamber therewith, and the parts being relatively reciprocal through a compression stroke from an extended position to an inserted position and through a suction stroke from the inserted position to the extended position;

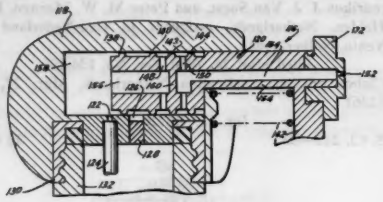
inlet port means for cooperating in communicating the container interior with the pump chamber during the suction stroke to permit product to enter into the pump chamber from the container interior solely by creating a negative pressure differential between the pump chamber relative

to the container interior to cause product to be sucked into the pump chamber;

outlet port means for product to be dispensed under pressure from the pump chamber during the compression stroke;

venting means for replacing product removed from the container interior into the pump chamber with air;

and



the inner and outer part defining cooperating surfaces for sequentially opening and closing the inlet and outlet port means during the relative reciprocation of the parts during the pumping cycle to permit product to enter the pump chamber and dispense it from the pump chamber without the necessity of external inlet and outlet check valves.

4,315,583

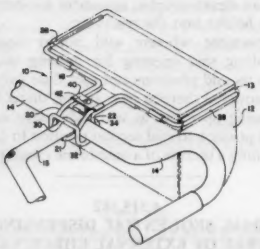
HANDLEBAR PACK SUPPORT

Edward K. Hine, Jr., Louisville, Colo., assignor to Hine-Snowbridge, Boulder, Colo.

Filed Sep. 22, 1980, Ser. No. 189,480

Int. Cl.³ B62J *7/06*

U.S. Cl. 224—41 **12 Claims**



1. A support to secure a pack to the handlebar structure of a bicycle at the intersection of the bicycle gooseneck and handlebar, the support comprising:

first and second elongated component formed symetrically at least at the portion adapted to engage the bicycle handlebar, each of the first and second components having a closed end, one of the components being adapted to extend over the bicycle gooseneck and under the handlebar and the other component being adapted to extend under the gooseneck and over the handlebar with the closed end of each component engaging the intersection of the handlebar and gooseneck,

means included on one of the components to engage and support a handlebar pack, and

releasable clamping means extending between the first and second components at a position forward of the handlebar engaging portions to clamp the first and second components around the handlebar and preclude rotation of the support in any direction.

4,315,584

METHOD AND A DEVICE FOR SEPARATING A PLURALITY OF LIGHT WAVEGUIDES CARRIED IN A CABLE

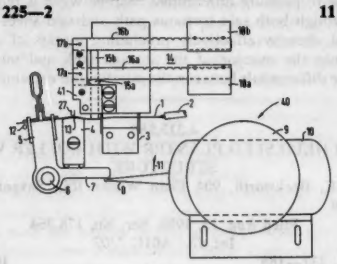
Friedrich Wuestner, Wolfratshausen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 27, 1980, Ser. No. 153,195

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1979, 2925070

Int. Cl.³ B26F *3/00*

U.S. Cl. 225—2 **11 Claims**



1. A method for separating each light waveguide of a plurality of light waveguides which are in a cable of light waveguides comprising the steps of clamping each of the light waveguides at spaced points to hold a portion of the waveguides between said points parallel to each other, positioning the light waveguides extending between the points over an anvil with each of the light waveguides being parallel to one another, applying a common tension force to each of the waveguides at the other side of the anvil, applying a vertical force to each of the waveguides at a point on one side of the anvil to apply an axial prestress to each of the waveguides extending across the anvil, and notching each of the prestressed light waveguides at a point in contact with the anvil to cause separation of each of the waveguides at its notch.

4,315,585

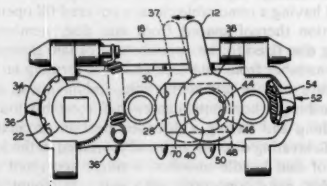
SHEET-FEED TRACTOR WITH ECCENTRIC CLAMPING DEVICE

Alan F. Seitz, Harwinton, Conn., assignor to Data Motion Incorporated, Torrington, Conn.

Filed Mar. 10, 1980, Ser. No. 128,590

Int. Cl.³ B65H *17/38, 17/52*

U.S. Cl. 226—74 **17 Claims**



1. In a sheet-feed tractor adapted to be slidably mounted on substantially parallel elongated support and drive shafts, the combination comprising:

a. a tractor body having a support-shaft opening therethrough;

b. a drive sprocket rotatably mounted in said tractor body and adapted to receive the drive shaft for sliding therealong and driving thereby upon rotation of the drive shaft about its longitudinal axis;

c. an endless belt disposed about said tractor body in engage-

ment with said drive sprocket for driving thereby upon driving of said sprocket by the drive shaft, said drive belt including sheet-engagement teeth adapted for engagement of perforated sheet material and advancement thereof upon driving of said drive belt by said sprocket; and

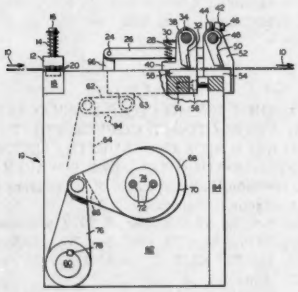
d. clamp means mounted on said body and having a support-shaft passage aligned with said support-shaft opening in said body for slidable reception of the support shaft therein, said clamp means including first and second clamp members each having an interior wall portion, said wall portions of said clamp members defining said support-shaft passage, said first clamp member extending outwardly from said body and being nonrotatably supported thereon, said second clamp member being pivotably mounted on said first clamp member for pivoting thereabout and about a pivotal axis extending through said passage, said passage-defining wall portions on said first and second clamp members having first and second opposed shaft-clamping wall portions respectively, along a common axial length of said support-shaft passage defined thereby for a portion of their axial length, pivoting of said second clamp member on said first clamp member effecting relative movement of said shaft-clamping wall portions to reduce or increase the maximum transverse spacing therebetween diametrically of the passage defined thereby, pivoting of said second clamp member thereby clamping the support shaft between opposed portions of said clamping surfaces along said common axial length of said support-shaft passage or releasing it to permit sliding therealong if its width is within the range of transverse spacings provided by said shaft-clamping wall portions.

4,315,586

DOUBLE-ECCENTRIC LOCKING MEANS

Earl W. Dolamore, Agawam, Mass., assignor to Roger L. Dalgleish, Suffield, Conn., a part interest

Filed Apr. 4, 1980, Ser. No. 137,396
Int. Cl.³ B65H *17/26*
U.S. Cl. 226—141 **27 Claims**



1. A strip-feed mechanism comprising:

a. a frame providing a feed path for strip material;

b. a gripper mechanism slidably mounted in said frame for reciprocation along said path, said gripper mechanism gripping strip material when said gripper mechanism is reciprocated in a first direction and strip material is disposed in said path, said gripper mechanism permitting the strip material to slip relative to said gripper mechanism when said gripper mechanism is reciprocated in a second direction opposite said first direction; and

c. an adjustable eccentric assembly mounted in said frame and including:

(i) drive means rotatable about a substantially horizontal axis and having a cylindrical portion whose cylinder axis is parallel to said axis of rotation, said cylindrical portion being externally threaded along at least a portion of its axial length;

(ii) a cam member having a bore therein, the wall of said bore having an internally threaded portion threadedly engaged with said threaded portion of said cylindrical portion of said drive means, said cam member having its periphery defining a cam surface varying in radial spacing from said cylinder axis of said drive member and effecting reciprocation of said gripper mechanism upon eccentric motion of said cam surface; and

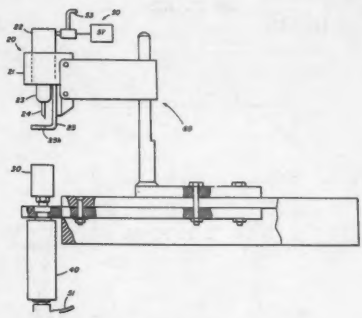
(iii) fastening means carried by one of said drive means and said cam member and clamping said drive means to said cam member to stress the threads of said engaged threaded portions, thereby increasing the static friction between said threads and tending to prevent relative rotational motion between said drive means and said cam member, rotation of said drive means thereby tending to cause rotation of said cam member and thereby reciprocation of said gripper mechanism when said cam surface varies in radial spacing from said rotational axis of said drive member.

4,315,587

POWERED ATTACHING ASSEMBLY

Don D. Ritter; Edwin A. Patterson, both of Gastonia, and Henry M. Pigg, Mount Holly, all of N.C., assignors to Dennison Manufacturing Company

Division of Ser. No. 412, Jan. 2, 1979, Pat. No. 4,215,807. This application Mar. 12, 1980, Ser. No. 129,790
Int. Cl.³ B65C *7/00*
U.S. Cl. 227—67 **6 Claims**



1. Appartus for inserting attachment members into compressible bulky material, with each attachment member including an end bar that is foldable against a filament, comprising

a separately movable jaw and a clamp that are movable towards one another and said compressible bulky material,

a slotted hollow needle that is movable into the bulky material compressed between said jaw and said clamp, and

means for feeding the end bar through the bore of a slotted hollow needle into said material.

4,315,588

HIGH SPEED ON-LINE STITCHER FOR SIGNATURES AND WEBS

Hans G. Faltin, 4135 Wilshire Dr., York, Pa. 17401

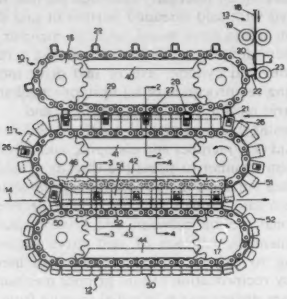
Filed Jan. 21, 1980, Ser. No. 113,671
Int. Cl.³ B42C *1/00*
U.S. Cl. 227—81 **11 Claims**

1. Apparatus for stitching moving paper articles, comprising in combination:

means transporting the articles along a linear path parallel to a line along which a plurality of staples are to be entered,

means transporting a plurality of U-shaped staples along the

linear path alongside the articles while passing their prongs through the articles along said line and clenching them, and means creasing the articles along a predetermined crease line as they move through the linear path in which the staples are passed through the article and clenched.



4,315,589

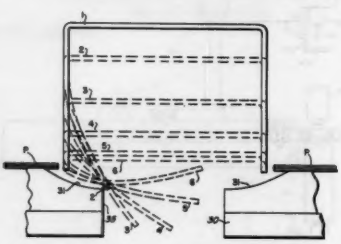
STAPLER APPARATUS

Tsai C. Soong, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 1, 1979, Ser. No. 80,626

Int. Cl.³ B25C *5/02*

U.S. Cl. 227—155 **5 Claims**



1. In a stapler apparatus of the passive clincher type having a base member and a staple magazine movably related toward each other during a stapling operation, means cooperating with the members for forming said members in opposite directions, the magazine member being provided at an end thereof with staple dispensing means, the base member being provided at an end thereof with an anvil member, the anvil member and the staple dispensing means being adapted to cooperate to permit individual ones of the staples to be dispensed toward and against the anvil member to perform a stapling operation when the base and magazine member are moved toward each other, and wherein the anvil member is formed with clinching grooves in generally longitudinal aligment or slightly offset for bending the legs of a staple toward each other during a stapling operation, the improvement wherein:

the anvil member is formed with a depressed area between and including the adjacent ends of the grooves, said depressed area being defined by an edge extending across each of the respective grooves said edges being positioned so that the tips of the legs of staples reach the same during staple clinching operating and extending into the opening during continuing passive clinching operation for controlling the angular bending of the legs.

4,315,590

SOLDER BATH APPARATUS

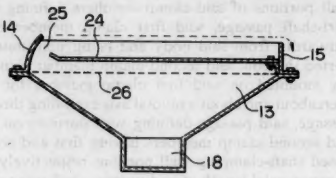
Kenshi Kondo, c/o Nihon Dennetsu Keiki Kabushiki Kaisha, No. 27-1, Shimomaruko 2-chome, Ohta-ku, Tokyo, Japan

Filed Dec. 18, 1979, Ser. No. 104,776

Claims priority, application Japan, Dec. 27, 1978, 53/177466[U]

Int. Cl.³ B23K *3/06*

U.S. Cl. 228—37 **5 Claims**



1. A solder bath apparatus, comprising:

an outer, open-topped vessel for containing molten solder;

an inner, open-topped vessel located within said outer vessel;

a conduit member having one end connected to a bottom portion of said inner vessel and bearing at the other end a solder supply port opening into the outer vessel;

means provided within said conduit member for continuously feeding molten solder from said outer vessel to said inner vessel through said solder supply port and said conduit member;

an imperforate plate member positioned substantially horizontally adjacent to an upper portion of said inner vessel and cooperating with the sidewalls of said inner vessel to control outflow of said molten solder from the inner vessel;

an opening provided adjacent one edge of said plate member and along one sidewall of said inner vessel such that the molten solder can flow out from said inner vessel only through said opening and forms on the exterior surface of said plate member a solder layer flowing substantially in the direction away from said one sidewall towards the opposite sidewall.

4,315,591

METHOD FOR THERMO-COMPRESSION DIFFUSION BONDING A STRUCTURED COPPER STRAIN BUFFER TO EACH SIDE OF A SUBSTRATELESS SEMICONDUCTOR DEVICE WAFER

Douglas E. Houston, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 18,653, Mar. 8, 1979, abandoned. This application Nov. 28, 1980, Ser. No. 210,993

Int. Cl.³ B23K *20/14;* H01L *21/58*

U.S. Cl. 228—188 **12 Claims**

1. A method for thermo-compression diffusion bonding first and second structured copper strain buffers to a substrateless semiconductor device wafer including first and second major opposed surfaces of unequal lateral extents and a beveled outer edge surface, said first and second structured copper strain buffers each including a bundle of substantially parallel closely packed strands of copper of substantially equal length having one common end thereof thermo-compression diffusion bonded to a metallic sheet, respectively, said method comprising:

applying first and second metallic layers on said first and second major opposed surfaces, respectively;

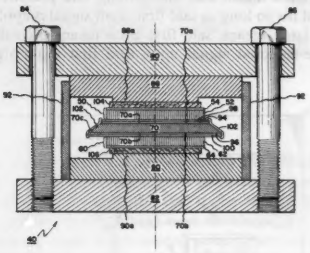
applying first and second metallizations on said first and second metallic layers, respectively;

coating said beveled surface with a passivation material;

sandwiching said semiconductor device wafer between and in axial alignment with said first and second structured

copper strain buffers, each of said structured copper strain buffers having a lateral extent equal to or less than the lateral extent of the respective major surface of said semiconductor device wafer in contact therewith such that said beveled edge remains uncovered by either of said structured copper strain buffers, the common end of the copper strands of each of said first and second structured copper strain buffers opposite the respective metallic sheet thereof being positioned facing said semiconductor device wafers;

surrounding with an inert atmosphere said semiconductor device wafer and structured copper strain buffers when sandwiched together;



applying a loading force to selected portions of said first and second structured copper strain buffers to squeeze said first and second structured copper strain buffers and said semiconductor device wafer together at high pressure, the selected portion of said first structured copper strain buffer being substantially of identical geometrical size and shape as, and substantially rotationally and axially aligned with, the selected portion of said second structured copper strain buffer; and

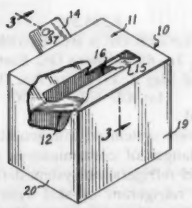
heating said semiconductor device wafer and structured copper strain buffers at a temperature within the range of 300° C. to 400° C. while said loading force is being applied.

4,315,592

DISPOSABLE RECEPTABLE FOR EXPENDABLE ITEM

Daniel L. Smith, 943 Oak Springs Court, Stone Mountain, Ga. 30083

Filed Sep. 18, 1980, Ser. No. 188,324
Int. Cl.³ B65D *5/10, 85/00*
U.S. Cl. 229—38 **6 Claims**



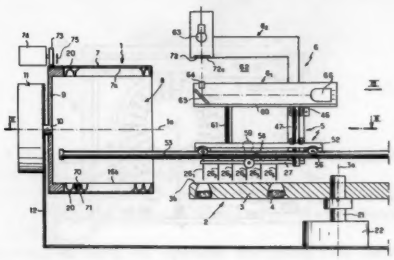
1. A receptacle for receiving expendable items, said receptacle including a container, a first baffle generally closing the top of said container and defining a first opening through said first baffle of such size and shape to receive said expendable items therethrough, a second baffle disposed below said first baffle, said second baffle defining a second opening therethrough of such size and shape to receive said expendable items, said second opening being horizontally displaced from said first opening, said first baffle and said second baffle defining a space therebetween sufficient to allow said expendable items to pass through said first opening, between said first baffle and said second baffle, and through said second opening to be received within said container.

4,315,593

DEVICE FOR CENTRIFUGING LIQUIDS CONTAINING PARTICLES OR CELLS IN SUSPENSION

Claude Matte, Paris, France, assignor to Centre National de Transfusion Sanguine, Paris, France

Filed Feb. 22, 1979, Ser. No. 14,092
Claims priority, application France, Mar. 1, 1978, 78 05899
Int. Cl.³ B04B *11/04*
U.S. Cl. 233—21 **26 Claims**



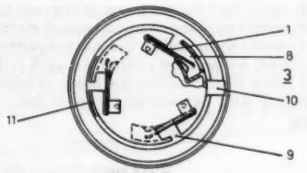
1. A device for centrifuging liquid, comprising a vessel having an orifice and adapted to hold the liquid to be centrifuged, and means for rotating the vessel around an axis of rotation of the device, said vessel having a shape chosen and being made of a material chosen so as to create, in the absence of rotation of the device, forces of attraction between the liquid and the vessel which prevent the liquid from escaping from the vessel irrespective of the position of the latter, the axis of rotation of said vessel being horizontal, the orifice of said vessel facing said axis of rotation.

4,315,594

CONNECTION APPARATUS FOR A FIRE ALARM

Werner A. Niederöst, Schmerikon, Switzerland, assignor to Cerberus Ltd., Männedorf, Switzerland

Filed Jan. 7, 1980, Ser. No. 110,006
Claims priority, application Switzerland, Jan. 23, 1979, 695/79
Int. Cl.³ G08B *17/00;* **H01R** *13/50*
U.S. Cl. 340—693 **9 Claims**



1. A connection apparatus for a fire alarm containing a socket portion intended to be secured to a room which is to be supervised and a fire alarm insert which can be connected with the socket portion by electrical and mechanical connection elements, the improvement which comprises:

an arrangement of at least three connection elements around the periphery of the socket portion;

an arrangement of contact springs, said contact springs being arranged in grooves arranged around the periphery of a side of the fire alarm insert confronting the socket portion;

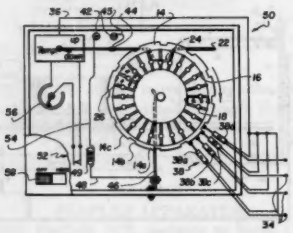
said connection elements and said grooves coming into engagement with one another such that during a first partial rotation of the fire alarm insert there is established the mechanical connection and during a subsequent second partial rotation of the fire alarm insert, in the same directional sense, there is established the electrical connection.

4,315,595

MULTI-APARTMENT REMOTE TIME VARIABLE TEMPERATURE REGULATOR AND RECORDER

Frank C. Martucci, 360 Tom Hunter Rd., Fort Lee, N.J. 07024

Filed Nov. 15, 1979, Ser. No. 94,384
Int. Cl.[3] F23N *5/20*; G05D *23/00*
U.S. Cl. 236—46 R **16 Claims**



1. A temperature control and monitoring device for a heater of a building having a plurality of seperate areas comprising:

a motor having a shaft rotatable at constant speed,

a disc connected to said shaft having a plurality of radially extending slots,

pin means slidable in each of said slots an positionable at a selected radial position,

a temperature indicator having a shaft rotatable by a change in temperature and responsive to a temperature sensed by temperature sensing members,

a plurality of temperature sensing members, each in one of the seperate areas, for sensing the temperature in each of the areas respectively, connected to said temperature indicator,

selector means connected between said plurality of temperature sensing members and said temperature indicator for selectively connecting one of said sensing members at a time for a predetermined time period and at predetermined intervals to said temperature indicator, a control arm connected to said temperature indicator shaft and engagable with at least one of said pin means, and

circuit means connected to said control arm, said pin means and the heater for starting the heater when the temperature indicator shaft rotates to engage said control arm with said at least one pin means in response to the temperature sensed by said connected sensing member,

said pin means positioned on said disc in a pattern to produce a selected temperature control for each full rotation of said motor shaft, whereby the heater is controlled in accordance with temperature sampled from the seperate areas.

4,315,596

ENERGY CONSERVATION SYSTEM FOR INNS, HOTELS, AND MOTELS

Philip Johnson, Jr., Santa Ana; Luis Mendoza, Tustin, and Donald Sodaro, Santa Ana, all of Calif., assignors to Innkeepers Electronics, Inc., Santa Ana, Calif.

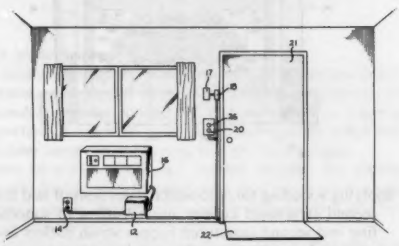
Filed Mar. 11, 1980, Ser. No. 129,248
Int. Cl.[3] G05D *23/00*; H01H *3/16*
U.S. Cl. 236—94 **35 Claims**

1. A system for reducing the unproductive consumption of energy by equipment primarily intended to be operated during the presence of a person or thing in the area of operation of said equipment and for preventing the recycling of said equipment in the event a person or thing is absent from the area of operation for a short period of time, said system comprising:

first input means responsive to the entrance of said area of operation being closed for providing a first input signal when said entrance is closed;

second input means responsive to a person or thing passing at least one point within the area of operation for providing a second input signal when said at least one point is passed;

first latch means responsive to said first and second input means for providing a presence-detected signal upon both of said first and second input signals being applied to said first latch means and maintaining said presence-detected signal for so long as said first input signal is applied to said first latch means, said first latch means providing an absence-detected signal upon said first input signal being



removed and maintaining said absence-detected signal until both of said first and second input signals are applied to said first latch means;

first output means for providing an enabling signal and a disabling signal, said first output means being coupled to said first latch means; and

first delay means for providing a first delay signal for a first predetermined time period starting when said first latch begins providing said absence-detected signal, said first delay means being coupled to said first latch means and said first output means;

said first output means providing said enabling signal when any of said presence-detected signal and said first delay signal is present and providing said disabling signal when none of said presence-detected signal and said first delay signal is present, said system being coupled to said equipment, said equipment being operable when said enabling signal is present and being inoperable when said disabling signal is present.

4,315,597

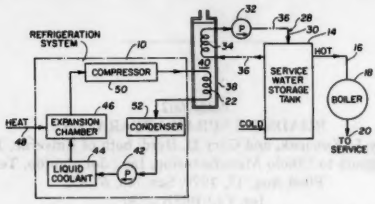
WATER PRE-HEATER OF A REFRIGERATION SYSTEM

Jerome Garraffa, Jr., 60 Simmons Dr., East Islip, N.Y. 11730

Filed May 2, 1977, Ser. No. 792,511
Int. Cl.[3] G05D *23/00*
U.S. Cl. 237—2 B **2 Claims**

1. A refrigeration system advantageously used to pre-heat water without danger of contamination, comprising a condenser coil of said refrigeration system defining a sealed flow passage for the refrigerant of said system during change thereof from its vapor phase into its liquid phase and thus when it releases heat, a water storage tank at a remote location from said condenser coil containing a volume of water desirably raised to an elevated temperature preparatory to use, a boiler operatively effective to primarily heat said volume of water, a water circulation system for supplementing the heat input to said volume of water consisting of a closed conduit loop for continuously circulating the water of said stored volume, a heat exchange coil defining a sealed flow passage for said

circulating water disposed in said closed conduit loop having an operative position in adjacent relation to said condenser coil, a pump disposed in said closed conduit loop effective to produce flowing movement in said water for a selected distance so as to contribute to a remote location of said water storage tank in relation to said condenser coil, a heat exchange housing disposed in enclosing relation about said adjacently located condenser and heat exchange coils, and a heat exchange fluid in said heat exchange housing immersing both said condenser and heat exchange coils to thereby cause said released heat of said condenser coil to be transferred to said water circulating through said heat exchange coil, whereby said circulating water is pre-heated prior to service during its sealed confinement within said heat exchange coil by heat salvaged from said refrigerant in sealed confinement within said condenser coil.

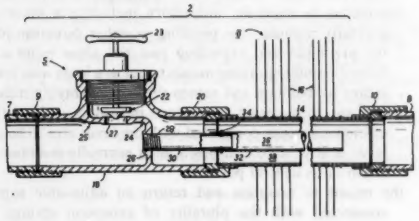


4,315,598

HEAT EMITTER UNIT FOR A HOT WATER HEATING SYSTEM

Stephen M. Madigan, Nutley, N.J., assignor to Danfoss A/S, Nordborg, Denmark

Filed Jul. 31, 1980, Ser. No. 173,985
Int. Cl.³ F24H 3/00
U.S. Cl. 237—70 **3 Claims**



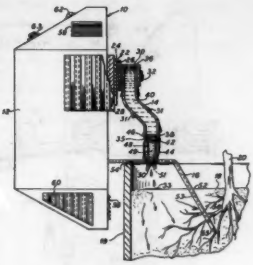
1. A heat emitter unit for a hot water heating system, comprising, a valve section having a casing, a heat emitter section including a pipe section and fin means attached to said pipe section, means connecting said valve and pipe sections, partition means for said valve casing having a bypass opening and a valve seat opening, centrally disposed tube means forming a central passage and an annular passage, said tube means extending from said bypass opening to a point generally aligned with the downstream side of said fin means, and controllable closure means for cooperation with said valve seat opening to control the flow of fluid through said passage.

4,315,599

APPARATUS AND METHOD FOR AUTOMATICALLY WATERING VEGETATION

Robert P. Biancardi, 6929 Northcote, Hammond, Ind. 46324

Filed Mar. 3, 1980, Ser. No. 126,408
Int. Cl.³ A01G 25/02
U.S. Cl. 239—10 **16 Claims**



1. A device for providing a supply of liquid water from the ambient atmosphere comprising the combination:

a thermocouple having means forming a thermally hot side and a thermally cold side when energized with electrical current,

electrical circuitry for operably energizing said thermocouple with electric current, and

a non-corrodible, hollow condensation member containing a thermally conductive fluid and having an outer condensation surface exposed to the ambient atmosphere and being thermally connected to said cold side of said thermocouple, whereby said electrical current flows through said electrical circuitry to said thermocouple producing a cold side on said thermocouple, said coldness removing heat from said condensation member resulting in said condensation member achieving a temperature below that of the ambient dew point temperature causing water vapor in the air to condense on said condensation surface of said condensation member in sufficient amounts so as to collect into drops and gravitationally drip from said condensation member.

4,315,600

SPRAY GUN INJECTOR

Edward J. Rhoades, Troy; Edwin C. Rosenberger, Piqua, and Jerome A. Waker, Casstown, all of Ohio, assignors to Chem-Lawn Corporation, Columbus, Ohio

Filed Jan. 17, 1980, Ser. No. 112,883
Int. Cl.³ B05B 7/28
U.S. Cl. 239—74 **5 Claims**

1. In combination with a spray gun including a muzzle and means for controlling the flow of a liquid through said muzzle, an injector comprising:

a main body section having a passage formed therethrough, means mounting said main body section on said gun with said passage communicating with said muzzle whereby said liquid flow through said passage is controlled by said spray gun flow control means,

a liquid-tight container,

a flexible diaphragm separating said container into first and second chambers,

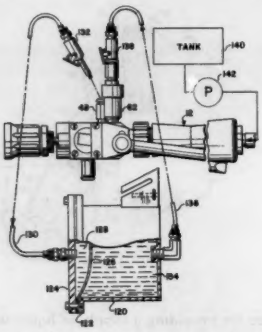
first means placing said first chamber and said passage in communication with each other at a first point along said passage whereby liquid pressure in said passage is transmitted directly to said first chamber an indirectly through said diaphragm to said second chamber,

second means placing said second chamber in communication with said passage at a second point therealong spaced from said first point,

valve means controlling flow from said second chamber into said passage,

said main body section includes an upper portion and a lower portion,

said second means placing said second chamber in communication with said passage includes an inlet into said main body section,



an opening in said main body section at said second point along said passage, and

a series of interconnecting ports in said upper and lower portions interconnecting said inlet and said opening at said second point along said passage.

4,315,601

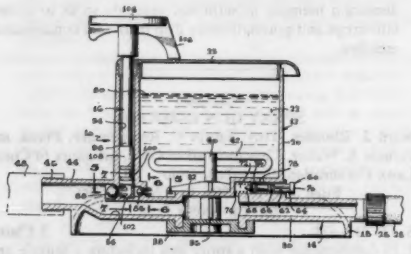
CHEMICAL INJECTOR

Steven A. Brooker, c/o Brooker Chemical Corp., 7633 Varna Ave., North Hollywood, Calif. 91605

Filed Aug. 4, 1980, Ser. No. 174,743

Int. Cl.³ B05B 7/04

U.S. Cl. 239—142 **15 Claims**



1. A chemical injector comprising:

a reservoir for containing a chemical-bearing liquid;

a water flow channel having an inlet and an outlet, with its inlet being for the connection to a supply of water under pressure and its outlet being for connection to equipment for the discharge of a liquid;

a Venturi tube in said water flow channel for causing a zone of reduced pressure when water flows through said water flow channel from the inlet to the outlet thereof;

an aspirating channel provided between said reservoir and said zone of reduced pressure for aspirating chemical-bearing liquid from said reservoir into said water flow channel, said aspirating channel having first and second check valves therein, both of said check valves permitting flow in a direction from said reservoir to said zone of reduced pressure and preventing flow in the opposite direction;

a cylinder bore between said check valves, a stem in said cylinder bore, a skirt on said stem, said skirt extending across said aspirating channel and being positionable within said aspirating channel to control flow through said aspirating channel, depending on position of said stem, said stem also having a piston thereon slidably received in said cylinder bore so that motion of said stem pumps liquid from said reservoir into said zone of reduced pressure so that said stem controls aspirated flow and movement of said stem controls pump flow from said reservoir into said water flow channel.

4,315,602

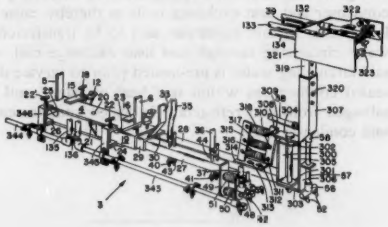
ROADSIDE SPRAY APPARATUS

Johnny L. Kubacak, and Gary D. Byrd, both of Bulverde, Tex., assignors to Cibolo Manufacturing, Inc., Jourdanton, Tex.

Filed Aug. 17, 1979, Ser. No. 67,552

Int. Cl.³ B05B 1/20

U.S. Cl. 239—163 **1 Claim**



1. A spray apparatus for roadside spraying from a moving vehicle; comprising:

a boom arm for pivotally mounting on the front of the vehicle to transversely position one end of the boom arm at either side of the vehicle;

an outer spraying means pivotally mounted at the outer end of the boom arm about a generally vertical pivot pin for pivoting of the outer spraying means in either direction upon engaging an obstacle;

means to normally maintain the outer spraying means in a central position and to return said outer spraying means to the central position after it is disengaged by an obstacle;

the means to maintain and return including a pivot arm pivotally mounted for pivoting in either direction about the pivot pin and extending past the pivot point away from the outer spraying means to act as a lever arm for the means to maintain and return the outer spraying means;

the means to maintain and return including a plurality of extension springs connected with the lever arm to bias the lever arm to a central position to normally maintain the boom in its central position;

the means to maintain and return an adjustable support connected with the plurality of extension springs and having a slidable mounting means to adjust the tension in the springs to vary the amount of force required to pivot the outer spraying means from its normal central position;

the boom arm is pivotally mounted at its inner end for alternately positioning the outer end of the boom arm on either side of the vehicle;

the outer spraying means includes a generally vertical telescoping support member supporting a plurality of spraying means; and

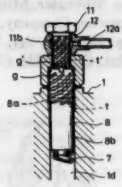
the plurality of spraying means includes plural separate sets of spraying nozzles for selectively spraying separate areas extending outwardly from the support member.

4,315,603

FUEL INJECTION VALVE

Takashi Nakajima, and Iwao Ohno, both of Higashi-Matsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Feb. 14, 1980, Ser. No. 121,523
Claims priority, application Japan, Feb. 26, 1979, 54-22873[U]
Int. Cl.³ B05B 1/32
U.S. Cl. 239—533.3 4 Claims



1. In a fuel injection valve including a needle valve, a nozzle body in which said needle valve is seated, a casing assembly holding said needle valve and said nozzle body and leakage fuel drain pipe means coupled to said casing assembly,

the improvement comprising a combination of:

a spring accommodated in said casing assembly and urging said needle valve against said nozzle body;

an adjusting threaded member having two ends, said adjusting threaded member being displaceably mounted in said casing assembly and urging at one end thereof said spring for adjustment of the setting force thereof through displacement thereof; and

a coupling threaded member engaged with said casing assembly and having two ends, one end thereof being arranged adjacent the other end of said adjusting threaded member, said coupling threaded member being adapted to connect said leakage fuel drain pipe means to said casing assembly;

said casing assembly having a threaded inner peripheral surface, and said adjusting threaded member and said coupling threaded member each having an outer peripheral surfcace thereof which is threaded and which is threadably engaged by said threaded inner peripheral surface of said casing assembly, said threaded outer peripheral surfaces of said adjusting threaded member and said coupling threaded member and said threaded inner peripheral surface of said casing assembly being configurated such that continuous gaps are formed therebetween to act as leakage fuel passages;

said adjusting threaded member and said coupling threaded member each have said threaded outer peripheral surface thereof formed therein with at least one helical groove extending a direction opposite to the direction of formation of a screw thread formed on the same threaded peripheral surface, said helical groove having a bottom face lying more radially inward than the bottom face of said screw thread, said helical grooves comprising said continuous gaps.

4,315,604

MEAT GRINDER WITH MEANS FOR SEPARATING GRISTLE FROM THE GROUND MEAT

Richard Meyenschein, Schriesheim-Altenbach, Fed. Rep. of Germany, assignor to Christ KG, Schriesheim-Altenbach, Fed. Rep. of Germany

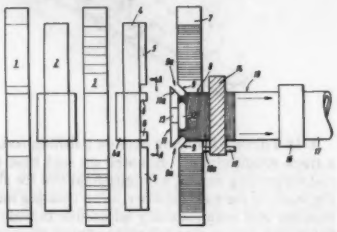
Filed May 5, 1980, Ser. No. 146,691
Claims priority, application Fed. Rep. of Germany, May 14, 1979, 2919321
Int. Cl.³ B02C 18/36
U.S. Cl. 241—82.5 7 Claims

1. Means in a meat grinding device for separating gristle, sinews and like tough material from the meat to be ground, which comprises the combination of

(a) an apertured discharge disc for the ground meat having an input side and an output side, the disc defining

(1) an axial bore having a threaded cylindrical portion and an adjoining funnel portion outwardly tapering in the direction of the input side,

(b) rotary cutter means comprising a separating knife having a plurality of radially extending cutter blades in axial alignment with the disc, the knife including



(1) obliquely extending cutting edges adjacent the input side of the disc and arranged to convey the tough material towards the axial bore, and

(c) a separating casing including

(1) an annular threaded portion engaging the threaded cylindrical portion of the axial bore for threadedly mounting the casing in the bore for axial adjustment in relation thereto, and

(2) an adjoining outwardly flaring separating head conforming to the funnel portion of the bore,

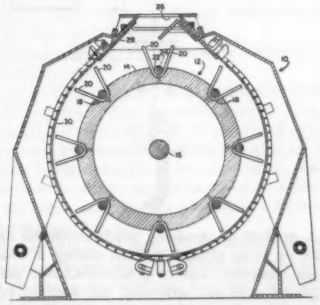
(3) the annular threaded portion defining at least one separating aperture adjacent the head.

4,315,605

HAMMER MILL ROTOR

John V. Vargo, Jr., Muncy, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Nov. 13, 1979, Ser. No. 93,805
Int. Cl.³ B02C 13/02
U.S. Cl. 241—192 4 Claims



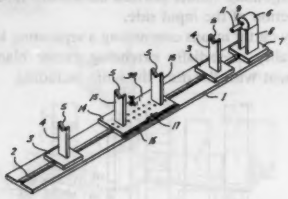
1. A rotor for hammer mills comprising a rotor body and a hammer secured to said rotor body, said hammer releasably and adjustably secured to said body by a separable attachment device and said hammer being comprised essentially of flexible wire rope.

4,315,606

FISHING ROD EYE TYING DEVICE

Roger S. Seiders, 12102 Cathy Dr., Houston, Tex. 77065

Filed Jan. 11, 1980, Ser. No. 111,392
Int. Cl.³ B65H *81/02*
U.S. Cl. 242—7.19 6 Claims



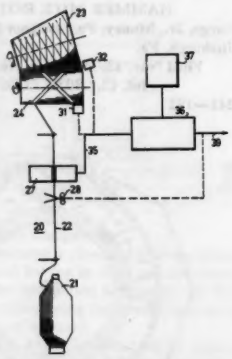
1. In a device for tying eyes on a fishing rod, a base member, a track longitudinally mounted on said base member, central rod supporting means, a longitudinal slot for slidably receiving the track of the base member, a rod rotating means on said base member and longitudinally adjustable outside rod supports in horizontal alignment with said rotating means mounted on said base member, thread supporting means on said central rod supporting means having a tension device for maintaining tension on thread to be applied to a rod, said central rod supporting means further having a groove, and a shuttle mounted in said groove on said thread supporting means for guiding said thread as it is wound on the rod.

4,315,607

METHOD AND APPARATUS FOR OBTAINING PREDETERMINABLE AND EXACT YARN LENGTH ON CROSS-WOUND BOBBINS

Ernst Felix, Uster, Switzerland, assignor to Zellweger Uster, Ltd., Uster, Switzerland

Filed Mar. 4, 1980, Ser. No. 127,058
Claims priority, application Switzerland, Apr. 10, 1979, 3413/79
Int. Cl.³ B65H *63/08*
U.S. Cl. 242—36 14 Claims



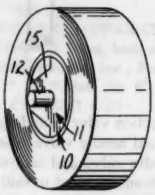
1. A method of obtaining predeterminable and exact yarn lengths on cross-wound bobbins during a winding process, wherein complete cops of precisely-known yarn length and also partial cops are unwound, the method comprising the steps of selecting a reference quantity (Rv) as an auxiliary quantity, which is at least approximately correlated with the yarn length (Lks) on the cross-wound bobbin; comparing for each cop the measured auxiliary quantity to the reference quantity (Rv) to determine if the cop provides the yarn lengths (Lt) of an unwound partial cop or the unwound length (Lr) of a remnant cop which is still being unwound; calculating the yarn lengths (Lt) and (Lr) of partial and remnant cops, respectively, obtaining a total of the wound yarn lengths (Lv), (Lt) as each cop is unwound until that total equals the required yarn length (Lks) on the cross-wound bobbin, and interrupting the winding operation when a length (Lks) has been reached.

4,315,608

TAPE MANDREL

Larry A. Bettenhausen, Stillwater, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Filed Sep. 22, 1980, Ser. No. 189,082
Int. Cl.³ B65H *17/02*
U.S. Cl. 242—68 3 Claims



1. A unitary molded plastic mandrel for supporting a core containing convolutely wound material comprising:

two spaced parallel generally triangular end plates having opposed faces and outer end faces;

a cylindrical stub shaft projecting perpendicular from the outer end face of each end plate, said shafts being axially aligned to define the axis of the mandrel, and

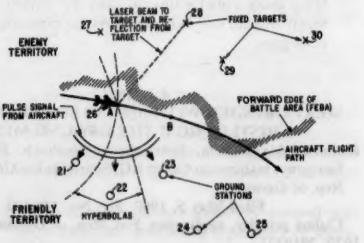
arcuate plates defining segments of a cylinder connecting said triangular end plates at corresponding corners of said triangular end plates, said arcuate plates having outer edges parallel to the axis of the mandrel, said arcuate plates being spaced at equal radial distances from said axis and each plate having a rib extending axially along the convex surface of the arcuate plate for engaging the inner cylindrical surface of the core.

4,315,609

TARGET LOCATING AND MISSILE GUIDANCE SYSTEM

James D. McLean; Frederick C. Alpers, both of Riverside; George R. Lanning, San Diego, and Fred H. Camphausen, China Lake, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 16, 1971, Ser. No. 154,235
Int. Cl.³ F41G *7/28*
U.S. Cl. 244—3.14 13 Claims



1. In a missile guidance system for guiding one of a plurality of missiles to a surface target or targets the combination comprising:

(a) an aircraft having target location equipment including a laser range finder, an altimeter, and a microwave pulse transmitter that are operated in synchronism for transmitting data for fixing a target location with respect to an artificial coordinate system;

(b) a plurality of ground stations, each of which receives the microwave pulse signals from the aircraft, and supplies output signals from which the target location relative to the ground station positions can be determined based on pulse time of arrival data and the said laser ranging and altimeter data;

(c) transmission means associated with at least one of the said ground stations for transmitting guidance information to at least one missile;

(d) receiving, sorting, and signal processing means within said missile for receiving and extracting said guidance information from said ground station in order to direct the missile in yaw toward a point approximately above the target and then downward toward the target in pitch; and

(e) directional information resolver circuit means for using the differences in times of arrival of pulses in order to establish the instantaneous position of the missile in terms of coordinates that constitute said artificial coordinate system.

4,315,610

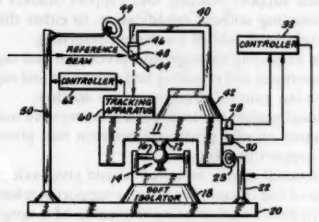
OPTICAL IMAGE STABILIZING SYSTEM

Richard M. Malueg, Glendora, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Aug. 2, 1978, Ser. No. 930,142

Int. Cl.³ F41G *7/00*; F42B *15/02*; G06F *15/50*

U.S. Cl. 244—3.16 **25 Claims**



1. A stabilizing system comprising:

a. at least one platform supported for movement relative to mechanical ground;

b. at least one reflector for receiving electromagnetic energy mounted on said platfrom; and

c. means for stabilizing said reflector by reference to said mechanical ground and apart from any movement of the platform.

4,315,611

DEVICE FOR SUSPENDING ARTICLES FROM A CEILING OR THE LIKE

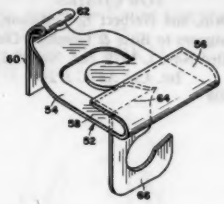
James B. Hoop, 8127 E. 12-Apt. 2, Tulsa, Okla. 74112

Division of Ser. No. 921,893, Jul. 5, 1978, Pat. No. 4,221,355. This application Dec. 13, 1979, Ser. No. 103,050

Int. Cl.³ B42F *13/00*

U.S. Cl. 248—340 **1 Claim**

1. A device for facilitating securing of articles to a ceiling and comprising substantially flat main body means for receiving an outer surface of a ceiling channel means there-against, flange engaging means provided on the main body means for selective engagement with the ceiling channel member, hook means carried by the main body means for receiving the articles to be suspended from the ceiling, said flange engaging means comprising a flange engaging member provided at one side of the body and extending in a reverse direction in spaced substantially parallel relation thereto providing a hiatus open for receiving one edge of the channel member therein, a yieldable hook member oppositely disposed from said flange engaging member and adapted for releasable engagement with the opposite edge of the channel member, said yieldable hook member extending in a first direction toward the flange engaging member and then in a reverse direction away from the



channel member terminating in a planar member disposed substantially perpendicular with respect to the main body means, and wherein the hook means comprises a hook-shaped member integral with the main body member and extending outwardly therefrom at substantially right angles with respect to the plane of the main body means and in an opposite direction with respect to the flange engaging means.

4,315,612

FISHING ROD EXTENDER

Benjamin Levine, Rte. 5, Box 1230-34, and Willis J. Belfield, P.O. Box 937, both of Sequim, Wash. 98382

Filed May 10, 1979, Ser. No. 37,817

Int. Cl.³ A01K *97/10*

U.S. Cl. 248—538 **3 Claims**

1. A fishing rod extender to be mounted on a boat to slidably receive the handle of a fishing rod on an incline and thereafter while remaining inclined to be manipulated to move an assembly of a fishing rod, reel, line, and lure transversely both toward and away from the centerline of a boat moving the rod and reel inwardly for adjustments and/or removal, and outwardly during fishing periods, to clear the fishing line farther away from the boat, comprising:

(a) a parallelogram linkage for securement at its bottom link to a mounting means;

(b) a fishing rod handle slidable receiving means secured at its bottom to the top link at one end thereof of the parallelogram linkage, the extending of the parallelogram in one direction toward the centerline of the boat placing the reel and handle of the fishing rod in a convenient stable inboard position for adjustment and removal by a fisherman, and in the other direction for placement outboard in a stable fishing position, and

(c) a mounting means secured to the bottom link of the parallelogram linkage and comprising an element having fastener receiving openings and a support engaging surface positioned at an acute angle relative to the longitudinal axis of the bottom link, and adapted to be removably secured to a boat near one side and arranged to position the bottom link of the parallelogram linkage on an incline at an upwardly directed angle, and consequently so positioning the top link of the parallelogram linkage, the fishing rod handle slidable receiving means, and any inserted

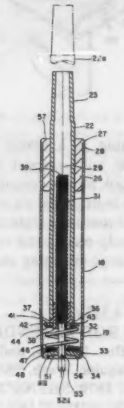
fishing rod handle and rod thereby always keeping the fishing rod in place until it is intentionally removed by the fisherman.

4,315,613

MECHANICAL HEIGHT ADJUSTMENT MECHANISM FOR CHAIRS

Robert H. Godwin, and Herbert E. Collignon, both of Evansville, Ind., assignors to Bliss & Laughlin, Oak Brook, Ill.

Filed Nov. 1, 1979, Ser. No. 90,339
Int. Cl.³ A47C *3/24*
U.S. Cl. 248—406 **8 Claims**



1. A vertically adjustable spindle assembly for a chair or the like, said assembly comprising:

first column means having an end portion adapted to attachment to base means;

second column means on said first column means and having an end portion adapted to attachment to seating means;

first guide means on said first column means and guidingly engaging said second column means for guiding relative linear movement of said second column means on said first column means;

first support means on said first column means and engaging said second column means for controlling longitudinal positioning of said second column means relative to said first column means;

said first support means and second column means having linear longitudinal axes and being rotatable with respect to each other about said axes,

said first support means and second column means having cooperable screw means thereon for causing relative linear movement between said first support means and said second column means upon relative rotation therebetween, to thereby change longitudinal position of said second column means relative to said first column means, said cooperable screw means including a screw on said first support means and a nut secured in said second column means, said nut being threaded onto said screw;

first rotational stop means in a cooperating relationship with said first column means and said first support means to prevent relative rotation between said first support means and said first column means in the absence of an external compressive load on said first and second column means in a direction tending to move said end portions toward each other, whereby rotation of said second column means relative to said first column means will change longitudinal position of said second column means on said first column means;

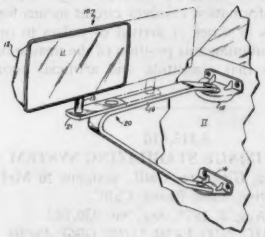
said first support means further including a compression spring inside said first column means in a force transmitting relationship to said first and second column means and applying a force on said first column means and through said screw to said second column means and thereby urging said first and second column means in a direction tending to move said end portions away from each other and establishing and maintaining the said cooperating relationship preventing said relative rotation.

4,315,614

CONSTANT TORQUE PIVOT ASSEMBLY

Philip D. Stegenga, and Wayne Vanden Brink, both of West Olive, Mich., assignors to Donnelly Mirrors, Inc., Holland, Mich.

Filed May 16, 1977, Ser. No. 797,023
Int. Cl.³ B60R *1/02*
U.S. Cl. 248—479 **3 Claims**



1. A pre-assembled constant torque pivot assembly for connecting an apertured pivot arm supporting a mirror or the like to an apertured support bracket, said support bracket being adapted for coupling without modification, to either the left-hand or the right-hand side of a vehicle comprising:

a pivot axle extending through said pivot arm and support bracket apertures and retaining said pivot arm and support bracket in lap joint relationship to one another;

a first frictional washer fabricated of a noncorrosive material and mounted on said pivot axle between said pivot arm and said support bracket;

a second frictional washer mounted on said pivot axle on the other side of one of said pivot arm or support bracket, said second frictional washer being fabricated of a noncorrosive material;

a spring washer mounted on said pivot axle on the outside of said second washer from said pivot arm and support bracket and bearing directly against said second washer; and

said pivot axle having two longitudinally and rotationally fixed, nonadjustable heads; one head being at each end of a shank between said heads; said pivot arm, said support bracket, said first washer, said second washer and said spring washer being mounted on said shank; said heads being spaced sufficiently close together to retain said spring washer in compression to provide a compressive force between said two heads which is applied to said first and second washers whereby relative rotation between said pivot arm and said support bracket is resisted by a constant torque.

4,315,615

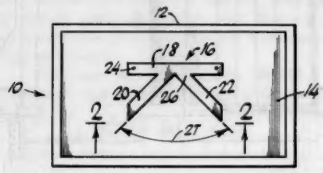
HANGER SUPPORT

Victor Scocozza, 117 E. 30th St., New York, N.Y. 10016

Filed Sep. 17, 1980, Ser. No. 188,136
Int. Cl.³ A47G *1/16*
U.S. Cl. 248—489 **7 Claims**

1. A hanger device to position and maintain the position of an object relative to a support structure comprising a first unit with means to attach the first unit, having the configuration of a rotated "K", to the object, the unit having a support bar and

legs extending therefrom wherein each of the legs has an overhang; and a second unit, having the configuration of a modified "V" with means for attachment to the support structure, the second unit having a plurality of legs each of which has an



extended edge which forms a channel with the remainder of the leg and support structure to respectively receive the overhang of each leg of the first unit in a complementary engagement when the second unit is attached to the support structure.

4,315,616

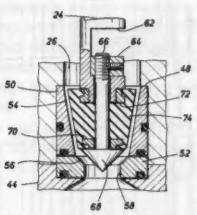
DUMP VALVE

Robert H. Welker, P.O. Box 138, Sugar Land, Tex. 77478

Filed Feb. 1, 1980, Ser. No. 117,400

Int. Cl.³ F16K 1/38

U.S. Cl. 251—210 **10 Claims**



1. A dump valve which comprises:

(a) a valve body having an axial passage therethrough with an inlet and outlet connected to said passage, said inlet delivering dump fluid to said axial passage which flows through said outlet;

(b) valve operator means incorporating an elongate push rod positioned in said valve body and extending along said axial passage, said push rod movably received therein and supporting a movable stem;

(c) a first valve seat being removably positioned within said axial passage upstream of said outlet;

(d) hard valve means supported by said push rod for movement into contact with said valve seat for sealing said axial passage against flow between the inlet and outlet thereof, said movable stem being secured to said hard valve means;

(e) a second removable valve seat serially arranged with said first valve seat in said axial passage;

(f) soft valve means surrounding said stem and being squeezed between said hard valve means and said push rod, said soft valve means being radially expandable on application of a compressive force thereto, whereby radial expansion of said soft valve means forms sealing contact against said second valve seat;

(g) wherein said first and second valve seats are located serially in said passage to control flow through said outlet; and

(h) means retaining said first and second valve seats in fixed and removable assembly within said axial passage.

4,315,617

LINE HAULERS

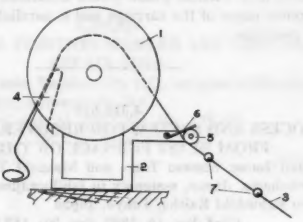
William Kingston, 49 Sandymount Ave., Dublin 4, Ireland

Continuation-in-part of Ser. No. 779,543, Mar. 21, 1977, abandoned, which is a continuation-in-part of Ser. No. 659,229, Feb. 19, 1976, abandoned. This application Jun. 5, 1978, Ser. No. 912,437

Claims priority, application United Kingdom, Feb. 20, 1975, 07096/75; Jun. 6, 1975, 24504/75

Int. Cl.³ A01K 73/06

U.S. Cl. 254—371 **4 Claims**



1. Powered line hauling means of the type wherein a line is pulled by frictional contact between rotatable V-groove surfaces, incorporating means for controlling the traction on said line, limited to automatic non-destructive means for preventing a length of said line from entering into said fractional contact, so as to break all tractive contact between said line and said surfaces, said contact-breaking means comprising a plurality of elements in sequence on said line, each of which renders said line too thick to enter into tractive contact with said V-groove surfaces, the distance between any pair of said elements being such as also to prevent any intermediate section of said line from entering into tractive contact with said groove surfaces, the number of said pairs of elements on said line being so determined that when the line immediately ahead of the leading element is at the normal point of exit from and the intermediate elements are disposed peripherally on, said hauling means, the line immediately behind the rearmost element is not in tractive contact with said hauling means.

4,315,618

MACHINE FOR SPLITTING SLABS BY OXYGEN-CUTTING

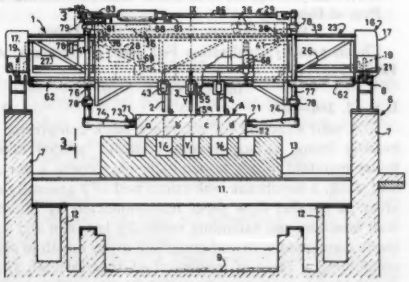
Jean Pawlowski, Pont de Steendam, France, assignor to Union Siderurgique du nord et de L'est de la France ("USINOR"), Paris, France

Filed Apr. 22, 1980, Ser. No. 142,842

Claims priority, application France, Apr. 27, 1979, 79 10906

Int. Cl.³ B23K 7/10

U.S. Cl. 266—69 **25 Claims**



1. A machine for splitting a slab, comprising a fixed support

on which support the slab lies flat, oxygen-cutting blow-pipes for cutting the slab, a bench which carries the blow-pipes and is movable in translation relative to the support in a direction corresponding to a direction in which the slab is cut, a runway carried by the bench, a carriage which is free to move in translation on the runway in a direction perpendicular to said direction of movement of the bench, self-centering means comprising two sensors cooperative with respective transversely opposed sides of the slab, the sensors being carried by the carriage, and means interconnecting the sensors whereby the sensors constantly occupy positions which are symmetrical relative to a vertical plane which coincides with a vertical reference plane of the carriage and is parallel to the slab-cutting direction.

4,315,619

PROCESS AND SYSTEM FOR RECOVERING TOP GAS FROM BLAST FURNACE OR THE LIKE

Kazumi Inoue; Shunzo Tono, and Masaoki Takahashi, all of Yokohama, Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 16, 1980, Ser. No. 159,591

Claims priority, application Japan, Oct. 30, 1979, 54/140159

Int. Cl.³ F27B *11/12*

U.S. Cl. 266—89 **6 Claims**

1. A process for recovering a top gas from a blast furnace comprising the steps of:

(a) flowing the top gas from a furnace top into a top hopper through a first untreated top gas thereby equalizing the pressure in the top hopper with the pressure in said furnace,

(b) reducing the pressure in the top hopper to a predetermined level by discharging the gas in said top hopper into a gas holder through a pressure discharge pipe means in communication with said top hopper thus dropping the pressure in said top hopper to the surrounding atmospheric pressure level,

(c) providing a second partially treated gas conduit means and discharge pipeline means, the latter being located in a branch conduit from said second partially treated gas conduit means and communicating with said first untreated top gas conduit at the downstream side of the junction between said first and second gas conduits,

(d) and driving pressure reduction means provided in said discharge pipeline means for secondly reducing the pressure in said top hopper to the surrounding atmospheric pressure.

4,315,620

STACK FOR THE THERMAL TREATMENT OF MATERIAL

Friedrich Megerle, and Jörg Krüger, both of Cologne, Fed. Rep. of Germany, assignors to Klockner-Humboldt-Deutz AG, Fed. Rep. of Germany

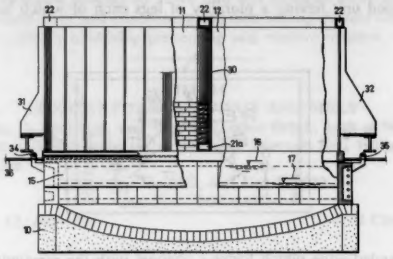
Filed Mar. 25, 1980, Ser. No. 133,906

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1979, 2915771

Int. Cl.³ C21B *7/10*

U.S. Cl. 266—193 **9 Claims**

1. A wall structure for a furnace stack comprising a load-bearing lining surface having vertically spaced upper and lower manifold means horizontally enveloping a hot zone in said stack, a membrane wall comprised of a generally annular array of parallel flow pipes interconnected by intermediate wall members and extending vertically between and cooperatively connected with said upper and lower manifold means for conducting a flow of cooling fluid therethrough from one manifold means to the other, said upper and lower manifold means having respective manifold portions projecting inwardly of said membrane wall and defining an alcove space



vertically therebetween, and insulation material mounted in said alcove space.

4,315,621

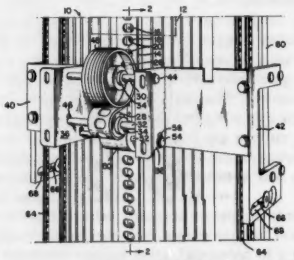
SHEET COLLATING DEFLECTOR

Donald L. Snellman, Seattle, Wash., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 7, 1979, Ser. No. 46,233

Int. Cl.³ B65H *29/60, 39/11*

U.S. Cl. 271—296 **2 Claims**



1. An improved sheet collating device comprising:

a column of spaced bins generally arranged along a line;

moving flexible sheet conveying means having a first surface on which the sheets to be conveyed rest positioned adjacent the spaced bins for conveying the sheets to be collated in a course substantially parallel to said line;

a deflector assembly operatively associated with the sheet conveying means for changing the orientation of the conveying means and thereby varying the course of the sheets, the deflector assembly including first and second rotatably mounted deflector rollers spaced from each other and having their peripheries tangent to a common deflection path defined by the conveying means, the conveying means being wound on the rollers so that the first surface of the conveying means faces toward the periphery of the first roller such that the sheet to be collated is positioned between the conveyor means and the first roller, the first surface of the conveying means facing away from the periphery of the second deflection roller to release the sheet being collated from the conveying means as the conveying means moves from the first deflection roller to the second deflection roller so as to allow the sheet being collated to move along the deflection path at an angle to the bin line; and

means whereby the position of the second deflector roller is adjustably movable relative to the first deflection roller to change the conveying means orientation and thereby vary

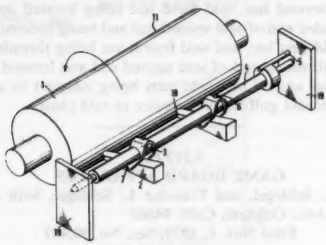
the angle of the deflection path during normal operation relative to the bin line.

4,315,622

DETACHING DEVICE FOR SHEET MATERIAL

Hermann Idstein, Oestrich-Winkel, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 16, 1980, Ser. No. 159,515
Claims priority, application Fed. Rep. of Germany, Jun. 28, 1979, 2926085
Int. Cl.³ B65H *29/54*
U.S. Cl. 271—311 6 Claims



1. A device for detaching sheet material from the surface of a roller, having a convex surface, comprising:

a plurality of detaching fingers pivotably mounted relative to the roller on a carrier rod, each said detaching finger having a contact surface bearing against the surface of the roller, the contact surface having a concave shape with a curvature which matches the convex surface curvature of the roller, and

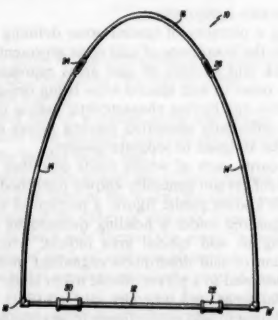
further wherein each contact surface has a convex curvature in a direction transverse to the concave shape.

4,315,623

SKIPPING HOOP APPARATUS

Hermas L. Granderson, P.O. Box 1263, Columbus, Miss. 39701

Filed Jan. 16, 1980, Ser. No. 112,795
Int. Cl.³ A63B *5/22*
U.S. Cl. 272—74 3 Claims



1. A skipping hoop apparatus comprising:

a curved hoop member comprising a pair of side members and an end member formed of segments of plastic pipe;

handle means connected to said hoop side members for swinging the hoop member in a circular motion about the axis of the handle means;

a tubular handgrip arranged about said handle means, said handgrip being freely slidable along the longitudinal axis of said handle means; and

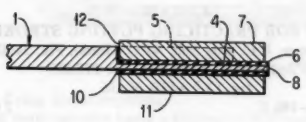
noisemaker means for generating an audible signal in response to an airstream passing thereover when said hoop member is swung in said circular motion, said noisemaker means comprising a pair of vibrating reed noisemakers, each having a body member including an elongate slot therethrough and a tensioned reed element affixed in said slot, a respective body member interposed between and interconnecting the hoop end member with a respective one of the hoop side members.

4,315,624

GOLF BALL POSITION MARKER AND GROUND REPAIR TOOL

Charles E. Buckman, Summerville, S.C., assignor to Wrightman Enterprises, Inc., Summerville, S.C.

Filed Aug. 14, 1980, Ser. No. 178,143
Int. Cl.³ A63B *69/36*
U.S. Cl. 273—32 A 2 Claims



1. A device for use in holding and placing a ball marker and in ground repair comprising:

a. a ball marker structurally comprising a substantially flat bottom, a substantially flat top, and a body extending from said substantially flat bottom to said substantially flat top;

b. a structure containing a center section;

c. a plurality of prongs extending from said center section and operative for use in ground repair;

d. a ball marker retaining section secured to said center section and operative to hold said ball marker comprising:

1. a ball marker retaining area, the approximate shape and size of said ball marker and indented into said ball marker retaining section with the shoulder of said indented ball marker retaining area forming a guide for the movement of said ball marker, said ball marker retaining area being of appropriate depth so that said ball marker would extend above said structure which includes said ball marker retaining section wherein movement of an object from said center section toward said ball marker retaining section would encounter the perimeter of said ball marker causing said ball marker to slide outward from said device; and

2. a magnet secured onto said ball marker retaining area;

e. a second ball marker retaining area which is the side of said ball marker retaining section opposite from the side of said ball marker retaining section containing said indented ball marker retaining area; and

f. a second magnet secured onto said second ball marker retaining area and operative to hold a second ball marker.

4,315,625

SHUFFLEBOARD CUE WITH SELECTIVELY FIXED OR SWIVELLED WEIGHTED RUNNER

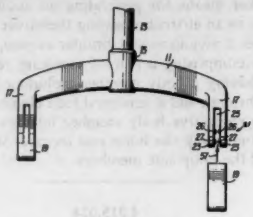
Samuel H. Allen, Seminole, Fla., assignor to Allen R. Shuffleboard Company, Seminole, Fla.

Filed Dec. 15, 1978, Ser. No. 970,029
Int. Cl.³ A63B *71/00, 67/14*
U.S. Cl. 273—129 L 11 Claims

1. A shuffleboard cue head for propelling a disc along a shuffleboard court comprising:

a frame for mounting to a handle, said frame having forwardly extending, laterally spaced arms which carry detachable runners;

said arms including connection means for detachably affixing said runners to said frame; and



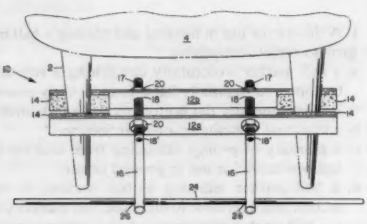
said connection means including means for attaching said runners to said frame in a first position which allows said runners to pivot or a second position which rigidly attaches said runners to said frame.

4,315,626

DEVICE FOR PRACTICING PUTTING STROKES

Purvis E. Hamm, P.O. Box 265, APO Miami, Fla. 34004

Filed Aug. 6, 1980, Ser. No. 175,897
Int. Cl.³ A63B *69/36*
U.S. Cl. 273—186 C **2 Claims**



1. A convertible, compactable, transportable, golf training device for practicing putting comprising:

(a) a first rod and a second rod, each of said rods being 8⅜" long, each of said rods being threaded at a first end of each said rod to be received within ⅜" diameter holes, each said rod having an unthreaded hole at a second end of each said rod sufficient to accomodate a trainer having a diameter of ¼", and said first rod and said second rod being spaced apart 13½" from the outer edge of said first rod to the outer edge of said second rod in a parallel relationship,

(b) a trainer 21⅛" long and ¼" in diameter and being positioned through both said unthreaded hole of said first rod and said unthreaded hole of said second rod,

(c) a first bar and a second bar, each said bar being 21⅛" long and 1¾" wide, said first bar having a first bar hole and a second bar hole, each said bar hole being of ⅜" diameter centered within the width of said first bar, said first bar hole being located 4" from a first longitudinal end of said first bar and said second bar hole in said first bar located 4" from a second longitudinal end of said first bar, and said second bar having a third bar hole and a fourth bar hole each of ⅜" diameter, said third bar hole being centered in the width of said second bar and located 4" from a first longitudinal end of said second bar and said fourth bar hole centered in the width of said second bar and located 4" from a second longitudinal end of said second bar, said first rod being positioned through said first and third bar holes and said second rod being positioned through said second and fourth said bar holes,

(d) at least four pads comprising a first pad, a second pad, a third pad, and a fourth pad, each said pad being 4" in length and comprised of a resilient material, said first pad being located at said first longitudinal end of said first bar, said second pad being located at said second longitudinal end of said first bar, said third pad being located at said first longitudinal end of said second bar, and said fourth pad being located at said second longitudinal end of said second bar,

(e) said combination being adapted for secure attachment to a chair having legs, said legs being positioned inside between said first bar and said second bar, and

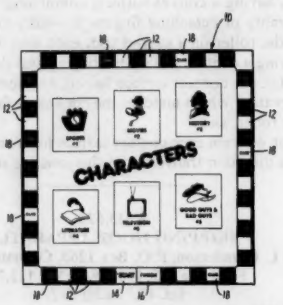
(f) nuts comprising a first nut, a second nut, a third nut, and a fourth nut, said nuts being threadable upon a threaded ⅜" diameter rod, said first nut being threaded upon said threaded end of said first rod and being located outside of said first bar, said second nut being threaded upon said threaded end of said first rod and being located outside of said second bar, said third nut being located upon said threaded end of said second rod and being located outside of said first bar, and said fourth nut being threaded upon said threaded end of said second rod and located outside of said second bar, said nuts being adapted to securely attach said golf training device to said chair.

4,315,627

GAME BOARD APPARATUS

Ronald L. Schlegel, and Francine L. Schlegel, both of 3815 Elston Ave., Oakland, Calif. 94602

Filed Nov. 1, 1979, Ser. No. 90,407
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—249 **3 Claims**



1. Game Apparatus comprising:

a board having a plurality of spaced areas defining a path delineated on the board, one of said areas representing the starting block and another of said areas representing a finish block, other of said spaced areas being designnated as special areas and having characteristic indicia thereon;

a plurality of differently identified playing pieces each of which is to be assigned to separate players;

a plurality of cards each of which cards describes on the obverse thereof certain generally known published activities of a well known public figure, a portion of said description organized under a heading denoted by indicia corresponding to said special area indicia, whereby a further portion of said description organized under said heading is disclosed to a player whose token lands on one of said special areas, and whereby said activities permit each card relating to said public figure to be classified into one of several different categories of general activity each of said cards in a particular category having indicia on the reverse thereof common to the reverses of all said cards in that category;

means for determining the order of play among said players and for the selection of one of said categories of general activity from said cards, said determining means comprising means for outputting indicia corresponding to the

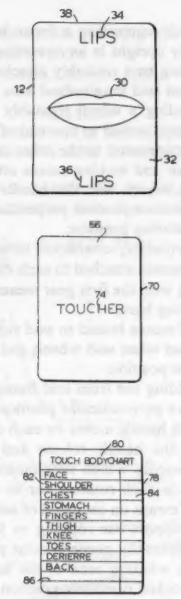
indicia on the reverse of said cards, whereby said players are enables to select a particular card and a card holder therefor from said players and to thereby permit said other players to determine the identity of the subject public figure of said card while at least one player is enabled to progress from said starting area to said finish block.

4,315,628

CARD GAME INVOLVING THE TOUCHING OF HUMAN BODY PARTS

Charles M. Balash, 7909 Shalimar St., Miramar, Fla. 33023; John R. Hill, 6123 111th Ave., Tampa, Fla. 33617, and Paul A. Moore, 6019 Floravista Ave., Tampa, Fla. 33604

Filed Jun. 23, 1980, Ser. No. 113,457
Int. Cl.³ A63F *1/04*
U.S. Cl. 273—296 **5 Claims**



1. In a game for entertainment with partners chosen by the roll of dice comprising two sets of cards,

each set having

a back side of a certain color and design, and

a front side having a pictorial representation of a part of the human body, and

each card of one of said sets of cards having inscribed on the back side thereof the word "toucher", and

each card of the other of said sets of cards having inscribed on the back side thereof the word "touchee" for identification of each of said sets of cards,

the pictorial representation of a part of the human body on the front side of said card having the word "toucher" inscribed on the back side thereof, being intended to specify the part of the human body to be used to touch with, and the pictorial representation of the part of the human body on the front side of the other of said sets of cards having the word "touchee" inscribed on the back side thereof being intended to specify the part of the human body to be touched,

said cards in each of said sets being placed with the front sides thereof facing down for being individually picked in sequence, and a body chart having various human body parts required to be touched for winning listed thereon,

whereupon the players assume various physical positions which result in amusement as the player depicted on the back side of the card as "toucher" actually touches with that part of his body designated on the front side of said "toucher" card, that part of the body of the player depicted as "touchee" on the back side of a card selected from the "touchee" set of cards,

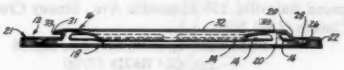
and then scoring on said body chart according to the human body parts specifically listed on said chart as having been successfully touched.

4,315,629

BI-WING FLYING DISC

Roy L. English, 2733 SE. 31st St., Portland, Oreg. 97202

Filed Sep. 25, 1978, Ser. No. 945,391
Int. Cl.³ A63H *27/00*
U.S. Cl. 273—425 **23 Claims**



1. A flying disc comprising:

a first outer annulus haing a first outer and inner circumference, said first outer annulus defining an aerodynamic lifting surface;

at least one inner annulus located interiorly of a cylindrical envelope defined by the inner circumference of the first annulus, said inner annulus having a second circumference smaller than said first inner circumference and defining a central opening located in a plane intermediate the elevation of the highest and lowest point of the disc for the passage of air therethrough, said inner annulus being configured such that the radially outermost edge thereof is located at an elevation above the lowest portion of said inner annulus;

a surface of revolution located between the inner and outer annulus, said surface of revolution interconnecting the inner and outer annulus; and

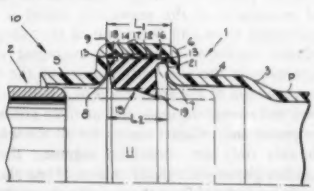
a plurality of apertures in the surface of revolution between the inner and outer annulus such that the surface of revolution defines a plurality of individual circumferentially directed rigid support means interconnecting the inner and outer annulus.

4,315,630

SEALING RING FOR SPIGOT AND SOCKET PIPE JOINT

David W. French, Littleton; Robert W. Heisler, Littleton; Antonio Maldarella, Jr., Jefferson County, and Gilbert W. Vanhoy, Denver, all of Colo., assignors to Johns-Manville Corporation, Denver, Colo.

Filed May 30, 1980, Ser. No. 154,668
Int. Cl.³ F16J *15/32*
U.S. Cl. 277—207 A **10 Claims**



1. A socket of a spigot and socket joint for connecting a pipe to said socket, said socket having a first substantially cylindrical portion, a second substantially cylindrical portion, an in-

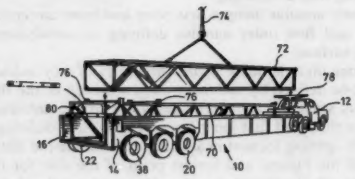
wardly open sealing ring groove positioned between and extending radially outwardly of said first and second cylindrical portions, said ring groove having an outer wall portion connected to said cylindrical portions by generally radially extending first and second wall portions, a sealing ring fixedly positioned within said ring groove, said sealing ring including a substantially rigid outer portion and a resilient inner portion for sealingly engaging the outer surface of said spigot, the axial distance between the inner surfaces of said first and second wall portions adjacent said outer portion of said ring being substantially greater than the axial distance between said walls adjacent said inner portion of said ring, at least for substantially the entire circumference of said ring groove.

4,315,631

TRAILERS FOR ELONGATED LOADS

Edmond Rainville, 135 Homeside Ave., Stoney Creek, Ontario, Canada (L8G 3G9)

Filed Mar. 8, 1979, Ser. No. 18,538
Int. Cl.³ B62D *37/00*
U.S. Cl. 280—6 H **9 Claims**



1. A trailer for the carriage of torsionally-sensitive elongated loads comprising:

(a) an elongated trailer frame of channel cross-section having a grouped plurality of running wheels at each side of its rear end,

(b) mounting means independently mounting each wheel to the trailer frame comprising a stub axle for each wheel,

(c) hydraulic piston and cylinder means for each running wheel connected between the trailer frame and the respective stub axle and permitting vertical movement of the respective wheel relative to the trailer frame by supply of operating liquid to the hydraulic piston and cylinder means and discharge of operating liquid therefrom,

(d) pipe means for supplying operating liquid to all of the said hydraulic piston and cylinder means, and

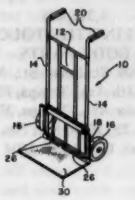
(e) valve means in said pipe means operable between one position in which all of the piston and cylinder means for all wheels of both grouped pluralities are connected together, whereby operating liquid fed to and discharged from one piston and cylinder means as the result of vertical movement of the respective wheel is respectively discharged from and fed to all of the other piston and cylinder means to provide an averaging effect of the movement of the said wheel among all the other wheels for reduction of the application of torsional forces to the torsionally-sensitive load, and another position in which the piston and cylinder means for all the wheels on each plurality only are connected together, the connected-together piston and cylinder means of one plurality on one side being isolated from the connected-together piston and cylinder means of the other plurality on the other side, so that the said averaging effect of the movement of any wheel is confined to the other wheels of the plurality on the same side.

4,315,632

FOLDING TWO-WHEELED HAND TRUCK

Frank E. Taylor, 1440 S. Seneca, Wichita, Kans. 67213

Filed May 27, 1980, Ser. No. 153,451
Int. Cl.³ B62B *1/04*
U.S. Cl. 280—40 **7 Claims**



1. A hand truck comprising a frame having a longitudinal axis and generally upright in an operative or stored position;

a pair of rotating bars rotatably attached to said frame and rotating about said longitudinal axis;

each bar including a wheel rotatably attached thereon, a handle means attached to one end of said bars and a first gear means connected to the other end of same;

a handle release and locking means attached to said frame and locking wheels and the handle means in either an outward operative position perpendicular to said frame or in a closed storing position;

a support bar rotatably connected to said frame;

a second gear means attached to each end of said support bar and meshing with the first gear means on each end of said pair of rotating bars;

a load support means bound to said support bar in order to support a load when said wheels and handle means are in the operative position;

said wheels folding out from said frame toward the eventually operative perpendicular position with respect to the frame as each handle means on each of the rotating bars is released by the handle release and locking means and rotated outwardly which simultaneously causes the first gear means on each rotating bar to engage and turn the second gear means on each end of said support bar resulting in the support bar rotating to fold out the support means to a generally perpendicular position with respect to the frame wherein each of the handle means is positioned in a locked operative position.

4,315,633

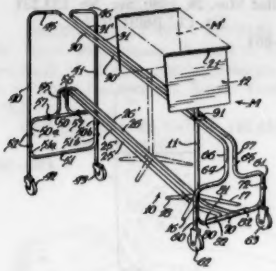
STORAGE CART FOR MUSIC STANDS

David R. Boeddeker, Medford, and Wayne V. Tenner, Bloomington, both of Minn., assignors to Wenger Corporation, Owatonna, Minn.

Filed Aug. 13, 1980, Ser. No. 178,129
Int. Cl.³ B62B *3/10*
U.S. Cl. 280—79.3 **10 Claims**

1. A storage cart for music stands comprising, a frame having floor-engaging rollers for cart mobility, a lower pair of spaced-apart rods extending lengthwise of the frame between the ends thereof and inclined relative thereto, an upper pair of spaced-apart rods overlying the lower pair of rods and extending lengthwise of the frame and inclined relative thereto to be in parallel relation with the lower pair of rods, said pairs of rods having the space therebetween defining a vertical storage plane which is exposed to an end of the frame at the upper ends

of said rods to permit entry of a music stand from an end of the frame into said storage plane with a column member of a stand



between the upper pair of rods and a leg of a music stand base between the lower pair of rods.

4,315,634

MUDGUARD FLAPS FOR MOTOR VEHICLES

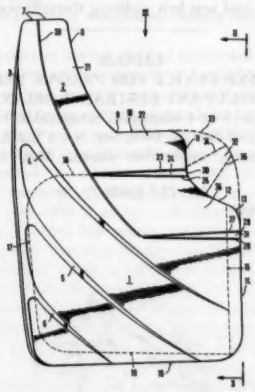
Knut Arenhold, Westend 7, 2000 Hamburg 52, Fed. Rep. of Germany

Filed Nov. 5, 1979, Ser. No. 91,531

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1978, 2848089

Int. Cl.³ B62D *25/16*

U.S. Cl. 280—154.5 R **13 Claims**



1. In a mudguard flap for attachment directly to the fender-fold of a motor vehicle, behind a vehicle wheel said mudguard flap having a flap main body and an adapter protrusion disposed upwardly from the flap main body, said adapter protrusion having a mounting area for attaching the flap to the fender-fold and for aligning the flap to the chassis of a motor vehicle, the improvement comprising the adapter protrusion having a bending line thereon, said bending line following generally the contour of the vehicle chassis in the vicinity of the place of attachment of the mudguard flap, said mounting area being bent forwardly along said bending line and being displaced from the plane of the unbent portion of the adapter protrusion and the flap main body to provide a bent angle of inclination of from 5° to 25°, whereby when said forwardly bent out mounting area of the mudguard flap is attached to a fender-fold, the unbent portion of the adapter protrusion and the flap main body are at least generally parallel with the axis of the wheel adjacent the mudguard flap.

4,315,635

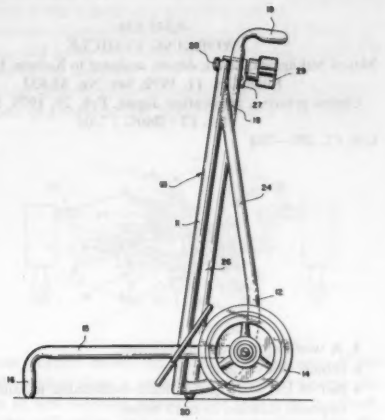
OBSTRUCTION TRAVERSING HAND TRUCK

Patsy Esposito, 350 Clarkson Ave., Brooklyn, N.Y. 11226

Filed Mar. 7, 1980, Ser. No. 128,290

Int. Cl.³ B62B *1/04*

U.S. Cl. 280—655 **5 Claims**



1. A collapsible hand truck comprising:

(a) a U-shaped tubular frame having first and second arms, the closed end of the U-shape being uppermost in an operative position of said hand truck;

(b) a first axle support affixed at top and bottom of a rear surface of said first arm;

(c) a second axle support affixed at top and bottom of a rear surface of said second arm;

(d) said first and second axle supports being substantially coextensive with said first and second arms respectively;

(e) an axle threaded through aligned holes in said first and second axle supports;

(f) first and second wheels rotatably mounted on opposed ends of said axle outboard of said first and second axle supports respectively;

(g) a U-shaped tubular platform having first and second aligned holes in third and fourth arms thereof, said first aligned hole being threaded on said axle between said first wheel and said first arm and said second aligned hole being threaded on said axle between said second wheel and said second arm, said U-shaped platform being hingeable on said axle between an inoperative position and an operative position;

(h) a U-shaped tubular retractable handle having fifth and sixth arms disposed generally parallel to and behind said frame;

(i) first and second spaced-apart parallel bars extending between corresponding positions on said first and second arms;

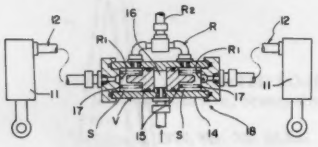
(j) a third bar extending between corresponding positions on said first and second axle supports, said third bar being disposed generally intermediate said first and second bars and spaced rearward of said first and second bars a distance effective to permit a guiding fit on said retractable handle at least in a retracted position thereof with said first and second bars contacting a first side of said fifth and sixth arms and said third bar contacting a second opposed side of said retractable handle;

(k) means on said closed end of said U-shaped tubular frame for clamping said retractable handle in at least one of said retracted position and an extended position;

(l) said first and second axle supports each including a guide portion, each guide portion sloping to the top of its respective first and second arm; and

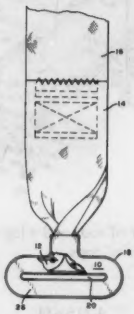
(m) said third bar lying completely forward of a surface defined by rearmost portions of said guide portions whereby said third bar is protected from contact with an obstruction during use of said hand truck.

4,315,636
WORKING VEHICLE
Masao Nakagawa, Sakai, Japan, assignor to Kubota, Ltd., Japan
Filed Oct. 11, 1979, Ser. No. 83,633
Claims priority, application Japan, Feb. 21, 1979, 54-19510
Int. Cl.³ B60G *17/04*
U.S. Cl. 280—703 **1 Claim**



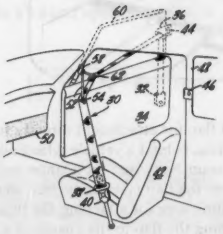
1. A working vehicle comprising:
a vehicle body frame;
a pair of left and right wheels oscillatable up and down in opposed relation to each other;
a pair of left and right oil cylinders mounted with respect to said body frame and said wheels to be extensible or contractable in opposed relation to each other with the up and down oscillation of said wheels relative to said body frame;
a master oil cylinder;
wheel brakes actuable by oil pressure for reducing speed of the vehicle during running and also for maintaining a parking condition of the vehicle, said wheel braked being connected to said master cylinder;
means for actuating said master cylinder;
a piping channel interconnecting said pair of oil cylinders, said piping channel including a valve means connected with said master oil cylinder, said valve means including: (a) a valve case; (b) a pair of oil spaces defined by said valve case on opposite sides thereof, a connecting channel establishing fluid communication between said oil spaces, an oil supply channel connected to said connecting channel for replenishing said pipe channel with oil; (c) a pair of oil passages formed in said valve case for communicating said oil spaces, respectively, with said piping channel; (d) a pair of valve elements disposed within said valve case and shiftable between positions to open and to close said oil passages, respectively; (e) a pair of springs constantly urging said valve elements toward the positions to open said oil passages, respectively; and (f) a further oil space defined by said valve case and said pair of valve elements and communicating with said master oil cylinder to urge said valve elements towards the positions to close said oil passages by oil pressure therein transmitted from said master oil cylinder;
said pair of springs having such resiliency so as to permit said pair of valve elements to close said pair of oil passages only when the oil pressure from said master cylinder exceeds a first level corresponding to maintaining the parking condition of the vehicle, but allowing said valve element to assume a position wherein said oil passages are open while the oil pressure from said motor cylinder is at a second level lower than said first level, said second level corresponding to oil pressure associated with speed reduction or nonactuation of said master cylinder, whereby said wheels are locked against oscillation only while the vehicle is in the parking condition.

4,315,637
SEAT BELT WEB GUIDE
Richard L. Frantom, Richmond, Mich., assignor to Allied Corporation, Morris Township, Morris County, N.J.
Filed Mar. 24, 1980, Ser. No. 133,231
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—801 **18 Claims**



1. A web guide for permitting seat belt webbing to pass therethrough, comprising:
(a) a length of fiber containing material, said material being shaped so as to define a loop having an opening sufficiently large as to permit seat belt webbing to pass through said loop; and
(b) means in said web guide to retain said loop in an open position in the form of a substantially elongated slot for receiving said seat belt webbing therethrough.

4,315,638
TRANSFER DEVICE FOR PASSIVE VEHICLE OCCUPANT RESTRAINT BELTS
Juichiro Takada, 3-12-1 Shinmachi Setagayaku, Tokyo, Japan
Filed Jul. 25, 1980, Ser. No. 172,278
Claims priority, application Japan, Aug. 6, 1979, 54-107668[U]
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—803 **1 Claim**



1. A passive vehicle occupant restraint belt system having a shoulder belt that leads from an anchor adjacent the lower rear inboard portion of the seat to and through a fixed guide adjacent the upper rear corner of the door and thence to a retractor on the door, a guide bar that extends from the guide forwardly along the upper part of the door and a control tape that is fastened to the belt and slidably connected to the bar such that when the door is opened, the control tape holds an intermediate part of the belt adjacent the upper part of the door, characterized in that there is a control ring on the free end of the tape which slidably receives the intermediate part of the belt, the tape thereby being formed into a loop such that when the door

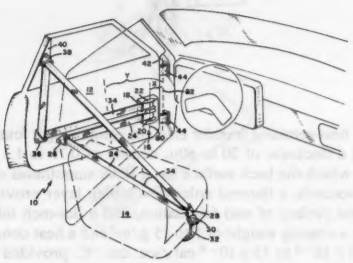
is opened the fastened end of the tape loop moves away from the bar and the control ring moves toward the bar and pulls the belt closer to the door.

4,315,639

PASSIVE SEAT BELT SYSTEM

Frederick C. Booth, Birmingham; Richard L. Frantom, Richmond, and Rudy V. Thomas, Sterling Heights, all of Mich., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jul. 14, 1980, Ser. No. 168,852
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—803 **17 Claims**



1. A passive seat belt system provided in a vehicle having a door adjacent to a vehicle seat, said door having a forward end hingedly connected at a hinge point to the vehicle frame, said system comprising:

at least one retractor mechanism fixedly mounted on said door;

a seat belt restraint having one end connected to said retractor mechanism and an opposite end attached to said vehicle at a position located on the inboard side of said seat, said restraint being movable towards and away from said retractor, said restraint providing a safety restraint for an occupant seated in said seat when said door is closed; and

a sensor operatively associated with said retractor mechanism and operable upon sensing a deceleration or acceleration of said vehicle above a predetermined amount to lock said retractor mechanism and prevent motion of said restraint away from said retractor mechanism, at least said sensor being mounted at a position on said door adjacent said one end of one door, said position being located no further from the hinge point of said door than a predetermined distance at which the "g" forces associated with the opening of said door are less than said predetermined amount of deceleration or acceleration, whereby said sensor is not actuated to lock said retractor mechanism upon normal opening motion of said door.

4,315,640

PASSIVE SAFETY BELT DEVICE FOR VEHICLES

Eiji Nakazato, Ohta, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 30, 1979, Ser. No. 71,167
Claims priority, application Japan, Sep. 8, 1978, 53-110310; Sep. 8, 1978, 53-110311
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—808 **7 Claims**

1. A passive safety belt device for a vehicle having a sashless door with a glass mounted therein, comprising

a seat having a backrest,

a retractor disposed in a lower portion of a central portion of the vehicle,

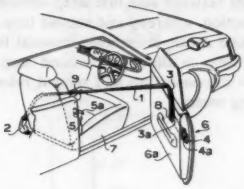
a safety belt unit comprising a seat belt and a resilient support means operatively connected together, said safety belt unit having an inner end connected to said retractor and an outer end,

means comprising a member on said door for connecting said outer end of said safety belt unit,

said resilient support means has an uppermost portion engaging an upper outer portion of said safety belt for holding said upper outer portion of said safety belt up above the backrest of the vehicle in a normal condition,

said retractor comprising a winding means and means for locking said safety belt when an excessive impact force is exerted on the retractor,

said resilient support means having an elasticity for maintaining itself in a substantially upright position with said uppermost portion above the backrest of the seat of the vehicle higher than a passenger's shoulder against the action of said winding means when said door is closed, whereby said safety belt extends diagonally across the passenger's body,



said door is formed with a space and an opening in an upper portion of said door, said opening communicates with said space,

said resilient support means is a tubular member inserted into said space of said door through said opening, said tubular member is secured to said door and said safety belt is inserted through said tubular member, and

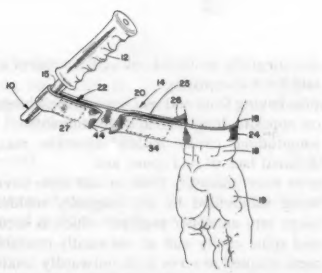
said outer end of the safety belt unit constitutes an outer end of said safety belt connected to said member.

4,315,641

MULTI-LOOPED SKI-POLE STRAP

Greg S. Larsen, 10721 Keswick St., Sun Valley, Calif. 91352

Continuation of Ser. No. 19,116, Mar. 9, 1979, abandoned. This application Dec. 4, 1980, Ser. No. 212,850
Int. Cl.³ A63C *11/22*
U.S. Cl. 280—822 **3 Claims**



1. A multi-looped, releasable ski-pole strap arranged to be releasably connected at one end to a ski pole adjacent the handle thereof, and at the opposite end to the wrist of a skier, said strap comprising:

a first elongated strap section of flexible soft material having one free attachable end and one secured end, said free end being formed to be releasably attached along said first

elongated strap section to define a first loop of said multi-loops to be secured around said ski pole;

a second elongated strap section of flexible soft material having one free attachable end and one secured end, said free end being formed to be releasably attached along said first elongated strap section to define a second loop of said multi-loops to be secured around said wrist;

an elastic stretchable material interposed between said first and second strap sections, and interconnecting each secured end of said first and second strap sections, to form a predetermined length thereof;

a first releasable fastening means provided on said first strap section, whereby said first loop is formed;

a second releasable adjustable fastening means under force provided between said first strap section and said second strap section, whereby said second loop is formed; and

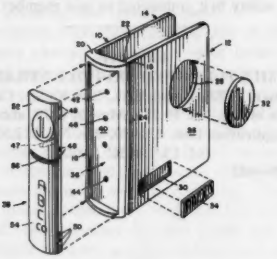
wherein said elastic stretchable material forms part of said second loop to allow said second loop to be expanded without disconnecting said second releasably adjustable fastening means.

4,315,642

INTEGRALLY MOLDED COVERS AND SPINES FOR LOOSELEAF BOOKS

Dominic R. Errichiello, 389 Meadowlark Rd., Bloomingdale, Ill. 60108

Filed Aug. 6, 1979, Ser. No. 63,863
Int. Cl.³ B42F *13/40*
U.S. Cl. 281—33 **5 Claims**



1. An integrally molded book constructed of a plastic material, said book comprising:

a spine having front and rear cover panels hingedly mounted on opposite, longitudinal edges thereof;

a longitudinal cavity molded into the rear, outwardly-directed face of said spine; and

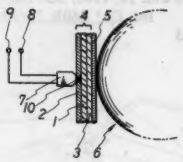
a spine insert matingly fitted in said spine cavity, said spine being subdivided by an integrally molded, transverse hinge into an upper segment which is securely fitted in said spine cavity and an outwardly-rotatable lower segment adapted to serve in its outwardly rotated position as an easel-like stand for the book wherein said transverse hinge is a V-notch formed horizontally in said spine insert, the walls of said V-notch being disposed at an angle of about 20 to 40 degrees relative to each other, whereby abutment of said walls upon the outward rotation of said lower insert segment limits said outward rotation to an arc of about the combination of said angles.

4,315,643

HEAT-SENSITIVE TRANSFER ELEMENT

Yukio Tokunaga, Yokosuka; Kiyoshi Sugiyama, Zushi, and Tadao Seto, Matsudo, all of Japan, assignors to Nippon Telegraph & Telephone Public Corp., Tokyo and Fuji Kagakushi Kogyo Co., Ltd., Osaka, both of, Japan

Filed May 23, 1980, Ser. No. 152,769
Claims priority, application Japan, Nov. 26, 1979, 54-153506
Int. Cl.³ B41L *1/20*; B32B *7/02, 9/06*
U.S. Cl. 282—27.5 **7 Claims**



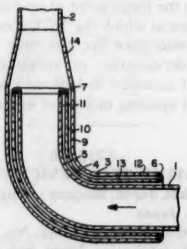
1. A heat-sensitive transfer element comprising a foundation having a thickness of 20 to 60μ, density of 0.75 to 1.3 g/cm³ and in which the back surface has a Bekk smoothness of 60 to 20000 seconds, a thermal color-developing layer provided on the front surface of said foundation, and a hot-melt ink layer having a coating weight of 1 to 15 g/m² and a heat conductivity of 4×10^{-4} to 15×10^{-4} cal./sec. cm. °C. provided on the back surface; the hot-melt ink layer including a heat-conductive material powder which has a heat conductivity of 6.0×10^{-4} to 25.0×10^{-4} cal./sec. cm. °C., and a solid wax which has a penetration of 10 to 30 at 25° C. as a binder material, and having a viscosity of 20 to 200 cP at 100° C.

4,315,644

MULTISHELL PIPE BEND

Walter Jansing, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Interatom Internationale Atomreaktorbau GmbH, Bergisch Gladbach, Fed. Rep. of Germany

PCT No. PCT/DE79/00015, § 371 Date Oct. 23, 1979, § 102(e) Date Oct. 18, 1979, PCT Pub. No. WO79/00650, PCT Pub. Date Sep. 6, 1979
PCT Filed Feb. 12, 1979, Ser. No. 175,209
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1978, 2807773; Nov. 6, 1978, 2848111
Int. Cl.³ F16L *51/04*
U.S. Cl. 285—179 **5 Claims**



1. Bend connection for pipelines and vessels, comprising a first and a second pipeline, a multiplicity of coaxial spaced-apart pipe bends disposed within each other, said pipe bends including at least an outer, an inner, and at least one middle pipe bend each having ends, one of said ends of said outer pipe bend being integral with said second pipeline, one of said ends of said inner pipe bend being integral with said first pipeline, and half torus-shaped connecting pieces connecting one of said ends of said at least one middle pipe bend to the next inner pipe

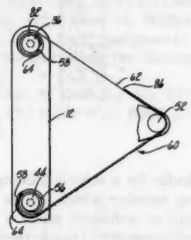
bend and connecting the other of said ends of said at least one middle pipe bend to the next outer pipe bend.

4,315,645

RUG HOOKING STAND

Billy B. Knox, 306 Labian Dr., Flushing, Mich. 48433

Filed Dec. 10, 1979, Ser. No. 101,911
Int. Cl.³ D04G 3/02
U.S. Cl. 289—18.1 7 Claims



1. A stand for holding an elongated pattern sheet having opposing edges, said stand comprising:

a pair of spaced and vertically extending upright supports each upright support having one end adapted to be supported by a ground surface;

a first elongated roller disposed between and rotatably secured to said upright supports;

a second elongated roller disposed between and rotatably secured to said upright supports so that said second roller is substantially parallel to said first roller and at a position spaced downwardly from said first roller, said second roller being positioned upwardly from said one ends of said upright supports;

an elongated rod secured to said upright supports so that said rod is substantially parallel to said rollers and at a position spaced laterally forwardly from both said first and second rollers;

means for detachably securing one edge of said pattern sheet to the other roller so that said sheet extends over and partially around said rod;

manually operated means for locking said first roller against rotation at an infinitely variably selected rotational position of the first roller;

manually operated means for locking said second roller against rotation at an infinitely variably selected rotational position of the second roller;

wherein one roller forms a supply roller around which the pattern sheet is adapted to be coiled while the other roller forms a takeup roller around which the pattern sheet is adapted to be coiled; and

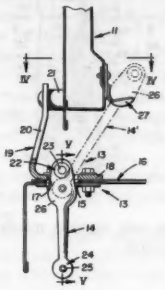
wherein said elongated rod and said second roller are spaced upwardly from said one end of said upright supports so that said pattern sheet extending between said rod and said second roller is spaced above the ground surface by an amount greater than a normal knee height of a seated person wherein each detachable securing means comprises a flexible attachment sheet fixedly secured along one edge to its respective roller and having a plurality of hooks secured to its opposite edge for engaging an edge of the pattern sheet, and wherein each attachment sheet has a width between its edges to enable said attachment sheet to be coiled around its respective roller.

4,315,646

DOOR HOLDER FOR CONSTRUCTION VEHICLES AND THE LIKE

Charles P. McReynolds, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00054, § 371 Date Jan. 21, 1980, § 102(e) Date Jan. 21, 1980, PCT Pub. No. WO81/02179, PCT Pub. Date Aug. 6, 1981
PCT Filed Jan. 21, 1980, Ser. No. 142,933
Int. Cl.³ E05C 5/00
U.S. Cl. 292—68 9 Claims



1. In a vehicle (10) having a door (11) pivotally mounted thereon for movement between closed and open positions, a platform (16) disposed beneath said door when said door is in its open position, and door holding means (13) for holding said door in its open position, the improvement comprising said door holding means, including latch means (14) for moving between retracted and extended positions on said vehicle and hook means (27) for releasably engaging said latch means when said door is in its open position and said latch means is in its extended position, said latch means being mounted on said platform, said hook means being secured on said door and further including an upstanding bracket (19) secured on said platform, adjacent to said latch means, having a stop (21) secured thereon to engage an external side of said door when said door is in its open position.

4,315,647

BOLT MECHANISM AND METHOD OF MAKING SAME

Herbert Wilzig, 606 N. 5th St., Montebello, Calif. 90640, and Charles J. Schuessler, 1340 E. Ruddock, Covina, Calif. 91722

Filed Sep. 18, 1979, Ser. No. 76,737
Int. Cl.³ E05C 1//06
U.S. Cl. 292—143 18 Claims

1. A flush bolt adapted for flush mounting on a door and operation between an engaged position with a securing surface and a disengaged position which comprises:

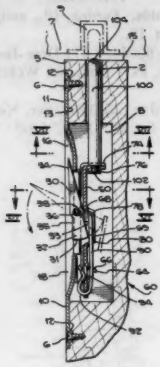
a faceplate;

a latch sled;

means for mounting said faceplate on said door;

integral tracks positioned longitudinally along said faceplate and extending upwardly and outwardly from said face plate for slidably engaging longitudinally positioned channels integrally associated with said latch sled wherein said channels extend downwardly and inwardly to accomplish said slidable engagement with said tracks;

means for slidably moving said latch sled to the engaged or disengaged position; and



means for biasing said moving means to the engaged or disengaged position.

4,315,648

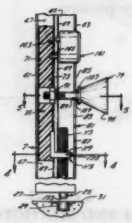
LOCK BOLT

Henri M. R. Labelle, 50 Westmooreland Ave., Cornwall, Ontario, Canada

Filed Oct. 26, 1979, Ser. No. 88,640

Int. Cl.³ E05C *1/10*

U.S. Cl. 292—150 **6 Claims**



1. A closure having a tubular frame member therein; a locking bolt mechanism mounted on the tubular frame member; the locking bolt mechanism including: guide means adapted to be mounted for longitudinal sliding movement within the tubular frame member, a lock bolt extending longitudinally within the tubular member, one end of the lock bolt mounted to the guide means, the other end projecting from the closure, the mounted lock bolt adjustable longitudinally relative to the guide means, manipulating means for moving the lock bolt between locked and unlocked positions, the manipulating means projecting from the guide means through a longitudinally extending slot in a wall of the tubular frame member, means for locking the one end of the lock bolt to the guide means after the lock bolt has been longitudinally adjusted to a desired position relative to the guide means, the locking means positioned to be accessible through the slot in at least one position of the lock bolt.

4,315,649

SECURING DEVICE FOR DOORS OR THE LIKE IN VEHICLES

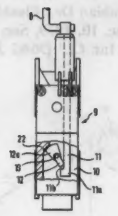
Manfred Lutz, Schweinfurt, Fed. Rep. of Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Oct. 23, 1979, Ser. No. 87,544

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1978, 2847589

Int. Cl.³ E05C *13/06*

U.S. Cl. 292—201 **15 Claims**



1. A securing device for a vehicle locking mechanism comprising an actuating member which can be moved between a locked position and an unlocked position by way of a key inserted in the mechanism from outside the vehicle; said member having a first stop face thereon facing in the direction of movement of said member from said locked position to said unlocked position, a locking element arranged to be movable to a position confronting said first stop face when said actuating member is in said locked position, first electromagnetic driving means including a driven member for moving said locking element, said locking element being coupled to said driven member, and circuit means coupled to said first driving means and said locking mechanism for energizing said first driving means in response to operation of said key.

4,315,650

MECHANICAL HAND AMUSEMENT DEVICE

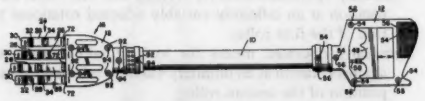
Kanji Yoshida, Tokyo, Japan, assignor to Tomy Corporation, Carson, Calif.

Continuation of Ser. No. 959,225, Nov. 9, 1978, Pat. No. 4,208,830. This application Mar. 26, 1980, Ser. No. 134,119

The portion of the term of this patent subsequent to Jun. 24, 1997, has been disclaimed.

Int. Cl.³ A47F *13/06*

U.S. Cl. 294—19 R **15 Claims**



1. An amusement device comprising:

a tubular arm;

a grip member movably mounted at one end of the said arm;

a hand member mounted at the other end of said arm, said hand member having at least one movable digit having a plurality of hollow segments joined by first flexible hinges;

a flexible strap corresponding to each said at least one movable digit, said strap being fixed to the terminal segment of said at least one movable digit and extending through the remaining segments; and

means connecting said grip and the strap corresponding to each said at least one movable digit for curling said at least one movable digit when said grip is squeezed, said means additionally restoring said grip member and said at least one movable digit to their former positions when said grip

member is no longer squeezed, wherein said means comprises

a rod connected to said grip member and extending through said tubular arm into said hand member,

a displaceable member linearly movable within said hand member, said displaceable member being attached to said rod and to the strap corresponding to each said at least one movable digit, and

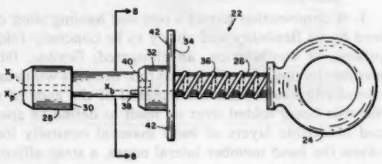
spring means disposed between said arm and said displaceable member for biassing said displaceable member away from said arm.

4,315,651

COUPLING FOR QUICK ATTACHMENT TO PLATE-LIKE STRUCTURE

Donald L. Endicott, Jr.; James M. Walton, and Robert L. Wernli, all of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 3, 1980, Ser. No. 137,026
Int. Cl.[3] B63C *7/16*; B66C *1/34*
U.S. Cl. 294—83 R **14 Claims**



1. Apparatus for coupling a selected force to a plate-like structure, there being a circular hole of selected diameter through said structure, said apparatus comprising:

a bearing element means for traversing said structure from a first side of said structure to a second side of said structure,

flange means comprising a flange for abutting said first side of said structure, and a bushing which is fixably joined to said flange for insertion into said hole;

shaft means which traverses said flange means and the bushing, the traversal of the bushing being eccentric thereto, and which has an end fixably joined to said bearing element means for positioning said bearing element means in a concentric relationship with said bushing when the shaft means is rotated in the bushing to a first position and for positioning said bearing element means in an eccentric relationship with said bushing when the shaft means is rotated in the bushing to a second position;

the shaft means and bushing having locking means for maintaining said bearing element means and said bushing in said eccentric relationship when the shaft means is rotated to said second position; and

spring means biasing the bearing element means toward the bushing for activating said locking means when the shaft means is rotated to said second position; and

means for coupling said selected force to said shaft means.

4,315,652

ANGLE CONTROL MECHANISM FOR GRAPPLE

Robert D. Barwise, Bovey, Minn., assignor to Robil Company, Minneapolis, Minn.

Filed May 1, 1980, Ser. No. 145,421
Int. Cl.[3] B66C *1/10*
U.S. Cl. 294—86 R **4 Claims**

1. In a load handling device having a longitudinally extending boom and a grapple assembly lying substantially in a single vertical plane and depending from a boom point portion of said boom, a grapple assembly angle control and support mechanism to support the grapple assembly from the boom point portion and to control the angular relationship of the plane of the grapple assembly with respect to a vertical plane including the longitudinal axis of said boom, said angle control and support mechanism including:

A. a generally horizontal base plate constituted as an integral part of the boom point portion of said boom, said base plate being provided with an opening therethrough;

B. bushing means integral with said base plate and extending upwardly therefrom in encircling relationship to said base plate opening;

C. a flat wear plate encircling said bushing means and supported on an upper surface of said base plate;

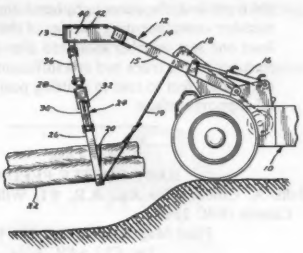
D. a grapple assembly rotator shaft rotatably mounted in said bushing means and extending above said bushing means and below said base plate;

E. a rotator shaft operator arm extending radially outwardly from said rotator shaft and having an upper portion integrally attached to said rotator shaft above said bushing means, an intermediate portion encompassing said bushing means, and a lower base portion positioned to be in bearing relationship to said wear plate;

F. a double acting linear actuator operably connected between said boom and an outer end portion of said rotator shaft operator arm;

G. means to selectively lengthen and shorten said actuator;

H. connector means connecting a lower end portion of said rotator shaft to an upper portion of said grapple assembly; said connector means being operative to cause said grapple assembly to rotate on a vertical axis responsive to rotation of said rotator shaft;



I. wherein said linear actuator is constituted as a hydraulic motor having a cylinder, a piston rod, and a piston dividing said cylinder into first and second motor chambers; and

J. wherein said means to selectively lengthen and shorten said actuator includes:

(1) a hydraulic pump having inlet and outlet ports,

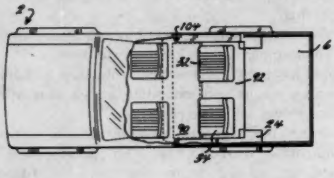
(2) a hydraulic valve having a body and movable valve means within said body,

(3) conduits open from each of said first and second motor chambers and from said pump inlet and outlet ports into said valve body,

(4) said valve means being movable between a first position wherein said first motor chamber is open to said pump outlet port and said second motor chamber is open to said pump inlet port, a second position wherein said first motor chamber is open to said pump inlet port and said second motor chamber is open to said pump outlet port, and a third position wherein said pump outlet port is open to said pump inlet port and said first and second motor chambers are open to each other and to said pump inlet and outlet ports, and

(5) valve control means to move said valve between said first, second and third positions.

4,315,653
TRUCK ASSEMBLY
Darel L. Sparling, 24311 Lakeview La., El Toro, Calif. 92680
Filed Sep. 4, 1979, Ser. No. 72,014
Int. Cl.[3] B60N 1/00
U.S. Cl. 296—63 23 Claims

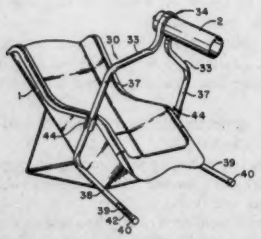


1. In a truck vehicle having a forward cab portion with a front floor and an open truck bed with vertical sides extending over and forming rear wheel wells that extend above the horizontal support surface of the truck bed, the improvement comprising:

an aperture cut across the entire original truck bed and extending between the rear wheel wells and the cab front floor;

an auxiliary floor member permanently mounted to cover the aperture in the truck bed and secured to the cab front floor to provide a substantially horizontal support surface complimentary to the front floor and lower than the original truck bed, the outer peripheral dimensions of the floor member complimenting the size of the aperture cut, and at least one seat member mounted above the auxiliary floor member on the truck bed at a sufficient height to permit an occupant's feet to rest, in a sitting position on the horizontal support surface.

4,315,654
BABY BOTTLE FEEDER
John A. Crook, Glen Rd., R.R. #1, Williamstown, Ontario, Canada (K0C 2J0)
Filed May 2, 1980, Ser. No. 146,074
Int. Cl.[3] A47C 9/14
U.S. Cl. 297—188 8 Claims

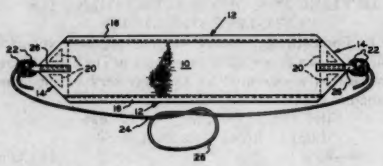


1. A support means for a nursing bottle adapted to be secured to an infant seat and the like, comprising a length of resilient tubing including

(a) a generally U-shaped portion, the bight portion of which takes the general configuration of an oarlock and is formed of a part of said resilient tubing which is flattened; said bight portion being adapted to slidably receive and firmly hold a nursing bottle in a plane perpendicular to that of said U-shaped portion;

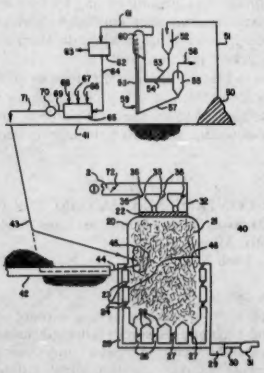
(b) two substantially parallel legs extending downwardly from said U-shaped portion and being continuous therewith, said legs being curved forwardly, the lower portion of said legs extending in a plane substantially perpendicular to the plane of the upper portion of said legs and said U-shaped portion, said legs terminating in a pair of foot portions equipped with counterbalance weights; said legs being adapted to be removably and pivotally secured to an infant seat.

4,315,655
HUNTER'S SEAT AND SLING
Edward I. Machnik, 3505 E. Michigan Ave., Jackson, Mich. 49201
Filed Oct. 31, 1979, Ser. No. 89,882
Int. Cl.[3] A45F 4/00
U.S. Cl. 297—118 1 Claim



1. A combination hunter's seat and hauling sling characterized by its flexibility and ability to be concisely folded, comprising, in combination, an elongated, flexible, fabric band member having a length at least four times its width and having lateral edges and ends, the material of the ends of said band member being folded over on itself to define an apex at each end of double layers of band material centrally located between the band member lateral edges, a strap affixed to each apex of double layered band material defining a loop extending beyond the associated apex, adjustable holding means defined upon each end of said band member comprising a pair of rings loosely mounted within each strap loop, and a flexible cord adjustable associated with each pair of rings and looped therethrough wherein the location of attachment of said cord to said rings may be adjusted.

4,315,656
METHOD FOR REDUCING POROSITY OF RUBBLIZED OIL SHALE
Robert D. Hall, Wheaton, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.
Filed Mar. 24, 1980, Ser. No. 133,148
Int. Cl.[3] E21C 41/10; E21B 43/247
U.S. Cl. 299—1 7 Claims



1. An improved method for enhancing the recovery of shale oil from underground in situ retorting of a rubblized mass of oil shale, comprising the steps of:

locating a porous zone in an underground retort containing a rubblized mass of oil shale before said mass has been completely retorted;

introducing a grout slurry of water and spent oil shale containing less than 0.2% by weight carbon to said porous zone before retorting is completed to substantially minimize the porosity of said zone.

4,315,657

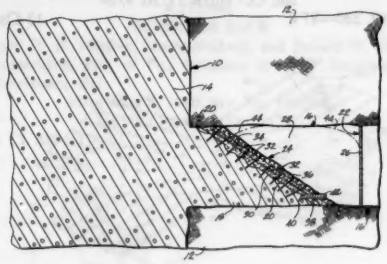
GAS SEAL FOR AN IN SITU OIL SHALE RETORT AND METHOD OF FORMING THERMAL BARRIER

Robert S. Burton, III, Mesa, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed Mar. 17, 1980, Ser. No. 131,398

Int. Cl.³ E21C *41/10*; E21D *11/10*

U.S. Cl. 299—2 **30 Claims**



1. A means for sealing an access drift excavated in a subterranean formation containing oil shale, the access drift being adjacent an in situ oil shale retort and in gas communication with a fragmented permeable mass of formation particles containing oil shale in the in situ oil shale retort, the drift containing a rubble pile of formation particles having a face approximately at the angle of repose of fragmented formation, the means comprising:

(a) a layer of heat insulating material disposed on the face of the rubble pile of formation particles; and

(b) a gas-tight bulkhead placed across such an access drift, said gas-tight bulkhead spaced apart from the rubble pile forming a void space in the access drift between the gas-tight bulkhead and the layer of heat insulating material.

27. A method for thermally protecting a gas-tight bulkhead in an access drift adjacent an in situ oil shale retort containing a fragmented permeable mass of formation particles containing oil shale through which a combustion zone is advanced, comprising the step of:

(a) applying a sufficient layer of thermal insulating material on the face of a rubble pile of formation particles in the drift for maintaining the temperature of the walls of the drift in a void space between the layer of insulating material and the bulkhead below the temperature of thermal sloughing of such walls.

4,315,658

MINING EQUIPMENT

Albert G. French, Willington, and Derek J. Brooks, Ashby-de-la-Zouche, both of England, assignors to Coal Industry (Patents) Limited, London, England

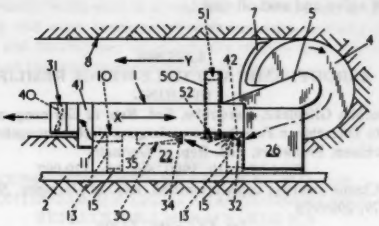
Filed Apr. 16, 1980, Ser. No. 140,751

Claims priority, application United Kingdom, May 25, 1979, 18342/79

Int. Cl.³ E21C *35/22*

U.S. Cl. 299—43 **12 Claims**

1. Mining equipment adapted for repeated traversing to and fro adjacent to a conveyor arrangable along a working face in an underground mine, the mining equipment comprising a mining machine bridge structure adapted to bridge over the conveyor, means which, in use, enable at least a portion of the bridge structure to traverse along a path spaced from the conveyor, and an airborne dust guide curtain means extending along and downwardly from opposed side portions of the bridge structure along a major portion of its length and downwardly towards opposed sides of the conveyor to define side walls of an open ended passage extending longitudinally beneath the bridge structure, the curtain means being arranged to negotiate undulations in the conveyor.



4,315,659

VEHICULAR ANTI-SKID BRAKE DEVICE

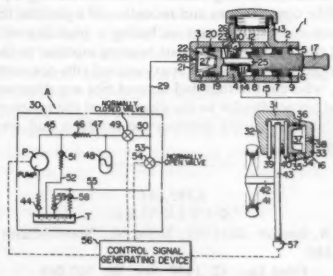
Tsutomu Hayashi, Houya; Hidehiko Inoue, Ooi, and Makoto Sato, Kamifukuoka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 24, 1980, Ser. No. 133,400

Claims priority, application Japan, Mar. 30, 1979, 54-37986; Mar. 30, 1979, 54-37987

Int. Cl.³ B60T *8/02*

U.S. Cl. 303—116 **2 Claims**



1. An anti-skid brake device comprising brake oil pressure generating means including a brake oil pressure generating cylinder for generating brake oil pressure in accordance with a braking operation input and a control oil pressure cylinder responsive to the brake oil pressure to be actuated to restrain generation of brake oil pressure by said brake oil pressure generating cylinder when said brake oil pressure is transmitted; braking force applying means for applying a braking force to wheels in response to brake oil pressure generated by said brake oil pressure generating cylinder; and control oil pressure generating means for immediately actuating said control oil pressure cylinder so as to restrain generation of the brake oil pressure by said brake oil pressure generating cylinder against said braking operation input when the braking force of said braking force applying means to the wheels is excessive, said control oil pressure generating means comprising a first oil passage system for communicating a pump as a control oil pressure generating source with said control oil pressure cylinder and a second oil passage system for communicating said control oil pressure cylinder with an oil tank, said second oil passage system having a normally open valve disposed in the

midst thereof, said valve being normally placed in open state but placed in closed state when the braking force to the wheels is excessive, and a pair of unidirectional valves for allowing flow of control oil only in a reverse direction to each other and being interposed in parallel between said normally open control valve and said oil tank.

4,315,660

AERODYNAMIC MULTIPLE-WEDGE RESILIENT BEARING

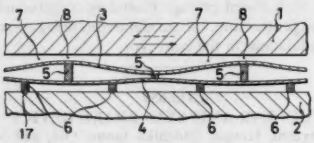
Joachim Glienicke, Karlsruhe, Fed. Rep. of Germany, assignor to Tmaschinen Forschungsvereinigung Verbrennungskra Maschinen, Frankfurt, Fed. Rep. of Germany

Filed Mar. 10, 1980, Ser. No. 129,007

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1979, 2909973

Int. Cl.³ F16C *32/06*

U.S. Cl. 308—9 **8 Claims**



1. An aerodynamic multiple wedge resilient bearing comprising: two bearing members; and means for resiliently supporting the two bearing members for movement relative to each other and for damping the relative movement of the bearing members comprising two superposed continuous foils and means mounting the superposed foils to one bearing member to form a clearance between the surface of the other bearing member and a bearing surface of one foil having a plurality of wedgelike constrictions and receptive of a gaseous lubricant therein, the mounting means including a plurality of spaced apart first ribs connecting the one bearing member to the other foil and a plurality of spaced apart second ribs connecting the two foils, wherein the first and second ribs are disposed alternately and perpendicular to the direction of the relative movement of the two bearing members to produce said wedgelike constrictions.

4,315,661

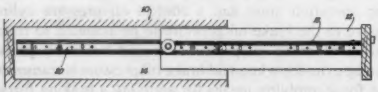
DRAWER SLIDE

Seymour A. Kessler, 2851 NE. 183rd St., North Miami Beach, Fla. 33160

Filed Dec. 12, 1979, Ser. No. 102,965

Int. Cl.³ A47B *88/04*; F16C *21/00*

U.S. Cl. 312—330 R **3 Claims**



1. A slide assembly comprising:

two mating members including a first member connectable to a moveable furniture item and a second member connectable to an adjacent non movable furniture item supporting the movable furniture item by said slide assembly and said second member directly interconnectable and solely connected to said first member,

each of said members including,

a main portion positioned vertically and having an upper edge and lower edge, and an upper flange portion projecting outwardly toward the other mating member, said main portion including outwardly projecting wheel guide means,

one rotatable wheel positioned vertically,

a hub connected to said main portion,

said wheel moveably connected to said hub with a circumference extending beyond the edge of said main portion,

said wheel guide means for limiting the side movement of the wheels by contacting the sides of said wheel, said wheel guide means sized and positioned to engage the side of the wheels, whereby said wheel is held in position between said first member and said second member.

4,315,662

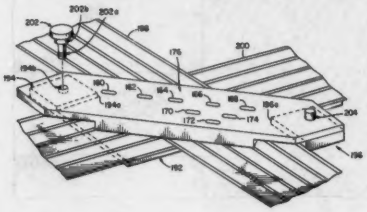
UNDERCARPET WIRING SYSTEM INSTALLATION KIT

William S. Greenwood, Nutley; Ted L. C. Kuo, Fanwood, and Raymond F. Piasecki, Leonardo, all of N.J., assignors to Thomas & Betts Corporation, Raritan, N.J.

Filed May 25, 1979, Ser. No. 42,539

Int. Cl.³ H01R *11/20, 4/24*

U.S. Cl. 339—97 C **12 Claims**



1. A kit of parts for use in the installation of a wiring system, comprising:

(a) flat electrical cable having a plurality of elongate conductors disposed in an electrically insulative casing and having an electrically conductive shield displaceably overlying said casing and electrically connected to one of said conductors; and

(b) connection means adapted for receiving first and second such cables in mutually overlapping shield-displaced relation and providing for predetermined mutual alignment thereof, said connection means limiting connection of conductors of said first cable to conductors of said second cable to preselected zones of the plurality of zones available for making connection therebetween; and

(c) means for identifying for connection use less than all of said preselected zones.

4,315,663

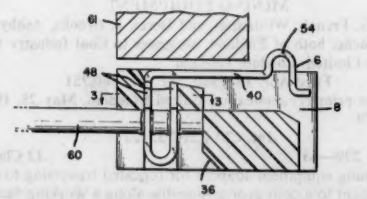
MULTIPLE POSITION BRUSH CONNECTOR

Billy E. Olsson, New Cumberland, Pa., assignor to AMP, Inc., Harrisburg, Pa.

Filed Mar. 10, 1980, Ser. No. 128,775

Int. Cl.³ H01R *13/00*

U.S. Cl. 339—97 P **8 Claims**



1. A brush connector for electrically terminating insulated conductors, comprising:

a connector housing having at least one profiled elongate

cavity extending downwardly into a top surface thereof, one end of each said cavity extending through said housing to a bottom housing surface;

at least one profiled contact member seated within said one housing cavity and having a downwardly deflectable horizontal spring arm projecting along said one cavity substantially in the plane of said top housing surface, and rearward conductor engaging means depending from a rearward end of said spring arm into said one end of said cavity,

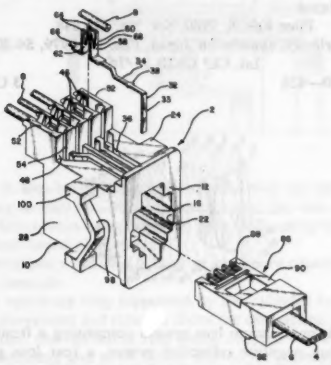
said one end of said cavity comprising an upper constructed passageway defined by opposing interior housing surfaces, and an elongate counterchannel opening to and extending parallel with said bottom housing surface and dimensioned to closely receive one of said conductors laterally therein, parallel of said bottom housing surface.

4,315,664

MODULAR JACK

Donald W. K. Hughes, Mechanicsburg, and Ronald W. Myers, Landisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 5, 1980, Ser. No. 146,808
Int. Cl.³ H01R *4/24, 13/514*
U.S. Cl. 339—176 M **4 Claims**



1. An electrical connector receptacle of the type comprising an insulating housing having a plug-receiving end and a rearward end, a plug-receiving opening extending into said plug-receiving end, said opening having opposed internal sidewalls and adjacent external sidewalls, and opposed internal endwalls, a plurality of stampd and formed electrical conductors mounted on said housing, each of said conductors comprising an intermediate portion and a contact spring portion, said contact spring portion extending from one of said internal sidewalls at a location adjacent to said plug-receiving end diagonally into said opening and towards the opposite internal sidewall, said intermediate portions of said conductors being inserted into side-by-side channels in the external sidewall which is adjacent to said one internal sidewall, said channels extending across said adjacent external sidewall towards said rearward end, said connector receptacle being characterized in that:

said adjacent external sidewall extends beyond said rearward end and forms a ledge which overhangs said rearward end,

a plurality equal to the number of said conductors, of open top stalls on said ledge, said stalls having front and rear stall sidewalls which face forwardly and rearwardly of said housing, each of said rear stall sidewalls having a wire admitting slot therein,

said intermediate portions of said conductors extending into said stalls, each of said conductors having an upstanding plate-like means in its respective stall, each plate-like means having a wire-receiving slot means therein which is receptive to a wire upon movement of said wire laterally of its axis and into said wire-receiving means and into the associated wire-admitting slot means whereby,

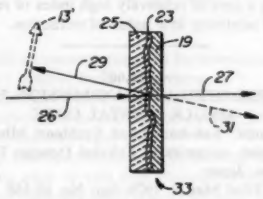
wires can be connected to said conductors by supporting a downwardly facing surface of said ledge on a supporting anvil, locating said wires in alignment with said wire-receiving slot means, and moving said wires laterally of their axes, into said stalls, and into said wire-receiving slot means.

4,315,665

COMPOSITE OPTICAL ELEMENT HAVING CONTROLLABLE LIGHT TRANSMISSION AND REFLECTION CHARACTERISTICS

Kenneth A. Haines, San Jose, Calif., assignor to Eidetic Images, Inc., Santa Clara, Calif.

Filed Sep. 7, 1979, Ser. No. 73,511
Int. Cl.³ G03H *1/02*
U.S. Cl. 350—3.61 **13 Claims**



8. A composite optical structure having different transmissive and reflective characteristics, comprising:

a substrate layer having surface variations on one side thereof and a substantially smooth surface on the other side thereof, said surface variations containing information of a light diffraction pattern,

an overcoat layer of material on said surface variation side of the substrate that smooths out said variations and having a thickness such that the composite structure is substantially uniform in thickness, the refractive indices of the substrate and coating materials being substantially the same, whereby light transmitted through said composite structure is substantially undiffracted and unrefracted by the surface variations of the substrate, and

a thin layer of material of substantially uniform thickness and held between the substrate and coating in a manner to conform to the surface variations of the substrate, said thin layer of material characterized by partially reflecting light incident on the composite structure, thereby to reflect a light pattern that is formed by the surface relief pattern of the substrate.

4,315,666

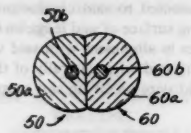
COUPLED COMMUNICATIONS FIBERS

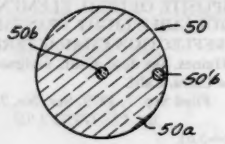
John W. Hicks, Jr., P.O. Box 345, Southbridge, Mass. 01550

Filed Mar. 19, 1979, Ser. No. 21,868
Int. Cl.³ G02B *5/172*
U.S. Cl. 350—96.15 **45 Claims**

1. A coupling device for coupling light intelligence between fiber optic elements, comprising a first elongated fiber optic transmission element, a second elongated fiber optic transmission element, each fiber optic transmission element having ends, being single mode, being rotationally non-symmetric to provide means for enhanced, efficient, evanescent wave cou-

pling in a selected portion of the periphery thereof to couple light intelligence from said first element to said second element





and including a core of relatively high index of refraction and a cladding of relatively low index of refraction.

4,315,667

FIBER FOR OPTICAL TRANSMISSION HAVING SINGLE CRYSTAL CORE

Yukio Nakagome, Yokohama, and Yoshinori Mimura, Tokyo, both of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Japan

Filed Mar. 9, 1979, Ser. No. 19,168
Claims priority, application Japan, Mar. 20, 1978, 53-32123
Int. Cl.³ G02B *5/172*
U.S. Cl. 350—96.34 **10 Claims**

1. A fiber for optical transmission, including a drawn single crystal core for propagating light formed by drawing a crystal melt through a nozzle to form a single crystal of an ionic substance except positive ions having no closed cell electronic structure and positive ions of strong covalency, and said drawn single crystal core of an ionic substance having a very low transmission loss at wavelengths in the infrared regions.

4,315,668

PERMEATION BARRIER FOR DISPLAY CELLS

Siegfried Aftergut; Erwin C. Buschmann, and Kenneth Q. Lao, all of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 17,043, Mar. 2, 1979, abandoned. This application Nov. 14, 1980, Ser. No. 207,009
Int. Cl.³ G02F *1/13*
U.S. Cl. 350—343 **4 Claims**

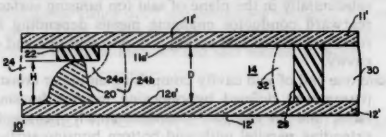
1. A cell for containing a material, comprising:

first and second substrates each having a surface maintained in spaced-apart relationship with the surface of the remaining substrate;

a first barrier of an inorganic material, said first barrier being fabricated upon and adhering only to the surface of said first substrate and extending toward said second substrate at least partially but less than completely across the distance separating the facing surfaces of said first and second substrates, inwardly of and substantially continually about the periphery of said substrates;

said first barrier and said first and second substrates defining the cavity of said cell;

a quantity of material contained within said cell; and



a second barrier extending between the surface of said second substrate facing said first substrate and that portion of said first barrier closes to said second substrate, said second barrier formed on an organic material;

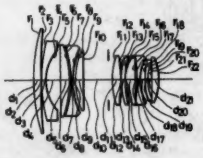
the inorganic material of said first barrier having a low rate of permeation to vapors harmful to the material in said cavity.

4,315,669

WIDE-ANGLE ZOOM LENS SYSTEM

Toru Fujii, Hino, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 8, 1980, Ser. No. 119,848
Claims priority, application Japan, Feb. 23, 1979, 54-20313
Int. Cl.³ G02B *15/16*
U.S. Cl. 350—426 **3 Claims**



1. A wide-angle zoom lens system comprising a front lens group having negative refractive power, a rear lens group having positive refractive power and an aperture stop arranged between said front and rear lens groups, said front lens group comprising a first positive meniscus lens element having a convex surface on the object side, a second negative meniscus lens element having a strongly concave surface on the image side, a third positive meniscus lens element having a concave surface on the object side, a fourth biconcave lens element and a fifth biconvex lens element, and said rear lens group comprising a sixth biconvex lens element, a seventh positive meniscus lens element, an eighth positive meniscus lens element, a ninth biconcave lens element, a tenth negative meniscus lens element having a concave surface on the image side and an eleventh biconvex lens element, said lens system being so adapted as to change the focal length of the entire lens system as a whole by changing said airspace reserved between said front and rear lens groups and satisfy the conditions enumerated below:

$$2.5 < |f_1/f_F| < 5.0 \quad (1)$$

$$0.7 < |f_2/f_F| < 0.8 \quad (2)$$

$$0.8 < |f_5/f_F| < 0.95 \quad (3)$$

$$n_4 - n_3 > 0.13 \quad (4)$$

$$r_5 < 0 \quad (5)$$

$$0.4 < f_{678}/f_R < 0.6 \quad (6)$$

$$0.4 < |f_9/f_R| < 0.7 \quad (7)$$

$$1.3 < |f_{10}/f_R| < 1.7 \quad (8)$$

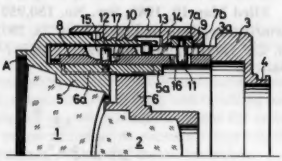
wherein the reference symbols f_1, f_2, f_5, f_9 and f_{10} represent focal lengths of said first, second, fifth, ninth and tenth lens elements respectively, the reference symbol f_{678} designates total focal length of said sixth, seventh and eighth lens elements as a whole, the reference symbol f_F denotes focal length of said front lens group as a whole, the reference symbol f_R represents total focal length of said rear lens group as a whole, the reference symbol r_5 designates radius of curvature on the object side surface of said third lens element, and the reference symbols n_3 and n_4 denote refractive indices of said third and fourth lens elements respectively.

4,315,670

ZOOM LENS BARREL WITH SINGLE OPERATING RING

Masaharu Shigoku, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 7, 1979, Ser. No. 91,946
Int. Cl.³ G02B *15/18, 7/04*
U.S. Cl. 350—429 **10 Claims**



1. A lens barrel which is provided with an optical system having at least two movable lens groups, the first of the movable lens groups being movable for both focusing and zooming, the lens barrel comprising:

a stationary cylinder having an imaginary central axis therethrough;

an operating ring supported by the cylinder for both axial movement and rotation about the central axis of the cylinder, the operating ring being adapted to be rotated for focusing and to be axially moved for zooming;

a first movable frame having an attachment mounting portion at its front end and having means for holding the first movable lens group at its inner portion;

axial guide means provided between the first movable frame and the cylinder for permitting only axial movement of the first movable frame;

a focusing mechanism having a single helicoid provided between the operating ring and the first movable frame, the helicoid and the axial guide means cooperating for axially shifting the first movable frame in response to the rotation of the operating ring and for causing the first movable frame to follow the axial movement of the operating ring;

a second movable frame holding a lens group other than the first lens group;

a zoom ring supported by the cylinder capable of only axial movement;

a cam member supported by the cylinder for rotation about the axis of the cylinder;

first engaging means for engaging the zoom ring with the cam member for rotating the cam member in response to the axial movement of the zoom ring;

second engaging means for engaging the cam member with the second movable frame for axially shifting the second movable member in response to the rotation of the cam member; and

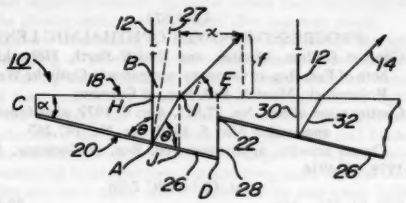
wherein one of the zoom ring and the operating ring has a circumferential groove and the other of the zoom ring and the operating ring has an engaging portion engaging the circumferential groove, the zoom ring being coupled with the operating ring through the engagement between the engaging portion and the circumferential groove such that the zoom ring follows only the axial movement of the operating ring.

4,315,671

LENTICULATED LENS

Jesse C. Bunch, 816 Easley St., Silver Spring, Md. 20910

Filed Oct. 3, 1977, Ser. No. 838,729
Int. Cl.³ G02B *3/08*
U.S. Cl. 350—451 **23 Claims**



1. A radiation concentrating lens for concentrating incident radiation to a positive focus, comprising:

(a) a substantially planar frontal surface being at least partially radiation transmissive for passage of said incident radiation therethrough; and,

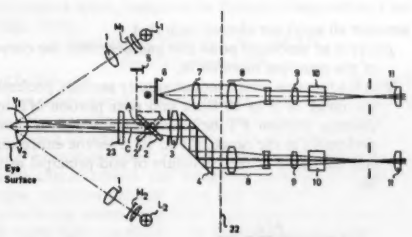
(b) at least two substantially planar inclined rear surfaces of said lens, each of said rear surfaces having non-parallel envelope contours with respect to said frontal surface, said non-parallel envelope contours being inclined each with respect to the other for concentrating said incident radiation to said positive focus, said incident radiation passing through said frontal surface being substantially devoid of refraction prior to reflection on said inclined rear surfaces.

4,315,672

COMBINABLE APPARATUS FOR EXAMINATION OF THE EYE

Ortwin Müller, Königsbronn, and Victor Stopar, Oberkochen, both of Fed. Rep. of Germany, assignors to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Continuation of Ser. No. 777,514, Mar. 14, 1977, abandoned. This application Jul. 9, 1979, Ser. No. 55,511
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1976, 2614273
Int. Cl.³ A61B *3/10*
U.S. Cl. 351—13 **4 Claims**



1. An ophthalmometer module as an article of manufacture for use with a binocular-microscope module having two telescope systems with a predetermined spacing between the axes

of said systems; said ophthalmometer module comprising ophthalmometer components, including an objective and an adjustable doubling device on an optical axis adapted for alignment with an eye to be examined, two mire-projecting systems symmetrically positioned and diametrically opposed with respect to said axis for concurrent direction at the eye to be examined, said ophthalmometer module including an axis-offsetting prism between its objective and the telescope systems, the axis-offsetting extent of said prism being half the spacing between axes of the telescope systems, and the orientation being such as to align the offset axis of said prism with one of the telescope axes when the said optical axis is aligned midway between the telescope axes.

4,315,673

PROGRESSIVE POWER OPHTHALMIC LENS

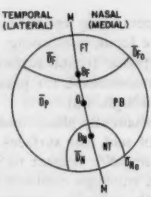
Günther Guilino, Munich, and Rudolf Barth, Höhenkirchen, both of Fed. Rep. of Germany, assignors to Optische Werke G. Rodenstock, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 27,813, Apr. 6, 1979, abandoned. This application May 5, 1980, Ser. No. 147,267

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1978, 2814916

Int. Cl.³ G02C 7/06

U.S. Cl. 351—169 **20 Claims**



1. A lens for eyeglasses, comprising a surface having an upper distance vision portion FT containing a far reference point B_F and given average distance-vision portion surface refractive powers $\overline{D}_F$, said surface having a lower near-vision portion NT containing a near reference point B_N given average near-vision surface refractive powers D_N, said surface having a progression region PB located between said distance portion FT and said near portion NT with average surface refractive powers $\overline{D}_P$ which effect a smooth transition from said distance portion FT to said near portion NT, said surface being divided into a temporal portion and a nasal portion by a principal meridian M which forms an umbilical point line, characterized in that said surface fits the following equation in a cylindrical system of coordinates (y, ρ, ϕ):

$$\rho(\phi,y) = \sum_{n=0}^{\infty} a_n(y) \cos [n\ k(y)\phi]$$

wherein all $a_n(y)$ are chosen such that

$\rho(0,y)$ is an umbilical point line and describes the curve f(y) of the principal meridan M,

k(y) is a function which monotonously ascends, preferably in the range of 3 to 10 from said near portion NT to said distance portion FT or is a number which is constant, preferably in the range of 3 to 10, over the entire surface, and the curve of the curvature of said principal meridian M

$$F(y) = \frac{f'(y)}{(1 + f^2(y))^{3/2}}$$

fits the equation

$$F(y) = A[1-(1+e^{-c(y+d)})-m]$$

wherein

$$A = D_N - \overline{D}_F$$

and the numbers c, d, m are chosen so that said far reference point B_F is located above a center point 0 of said surface, so that, above the far reference point B_F, the average surface power $\overline{D}_F$ along said principal meridian M is constant up to ±0.25 diopters, so that said near reference point B_N is located below said center point 0 of said surface, and so that, below said near reference point B_N, the average surface power $\overline{D}_N$ along said principal meridian M is constant up to ±0.25 diopters.

4,315,674

FOCAL POINT DETECTING SYSTEM

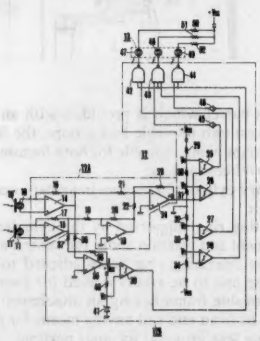
Kazuya Hosoe, Machida; Nobuhiko Shinoda, Tokyo; Minoru Fukuda, Yokohama; Takashi Kawabata, Kamakura; Takao Kinoshita, Tokyo, and Tadashi Ito, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 19, 1980, Ser. No. 150,959

Claims priority, application Japan, May 23, 1979, 54-63371

Int. Cl.³ G03B 7/08; G01J 1/20; G03B 17/20

U.S. Cl. 354—25 **8 Claims**



1. A device for detecting the focusing condition of an image forming optical system arranged to be focused on an object, comprising:

(a) focus detecting circuit means for producing an electrical output which varies with change in the focusing condition of said image formed optical system to be focused on said object;

(b) three display elements arranged to display the focusing condition of said image forming optical system to be focused on the object; and

(c) display control circuit means for controlling the display by said three display elements on the basis of the electrical output of said focus detecting circuit means, said display control circuit means being arranged to actuate a first of said three display elements when the image forming optical system is focused onto a distance closer than said object, to actuate the first and a second of the elements when the optical system is focused onto a distance slightly closer than said object, to actuate the third of the elements when the optical system is focused onto a distance beyond said object and to actuate the second and third of the elements when the optical system is focused onto a distance slightly beyond said object.

4,315,675

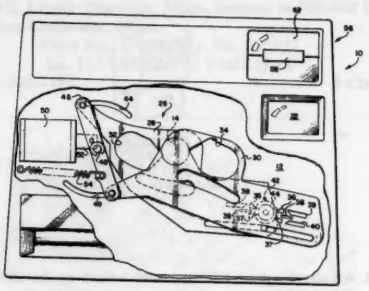
METHOD AND APPARATUS FOR SELECTIVELY POSITIONING SPECTRAL FILTER

Bruce K. Johnson, Andover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 108,546, Dec. 31, 1979, abandoned. This application Jun. 3, 1980, Ser. No. 156,198

Int. Cl.³ G03B *7/14*

U.S. Cl. 354—26 **21 Claims**



18. In a photographic apparatus having means for directing image forming light rays from a scene along a given path to a photographic film material mounted at a given focal plane, means for evaluating radiation from said scene during an evaluation period, means for unblocking and blocking said path, and means responsive to said evaluation means for controlling said unblocking means to define an exposure interval, the improvement wherein said evaluating means includes:

means responsive to operation of said unblocking and blocking means for automatically substantially precluding evalution of selected spectral frequencies during at least one portion of the operation of said unblocking and blocking means while substantially permitting evaluation of said selected frequencies during at least another portion of the operation of said unblocking and blocking means.

4,315,676

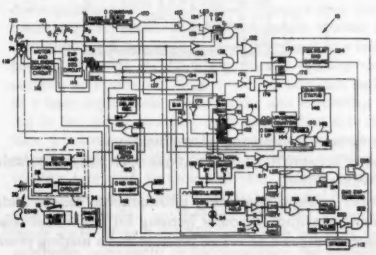
CAMERA WITH AUTO RANGING FOCUSING AND FLASH FIRE CONTROL

Arthur G. LaRocque, Belmont; George D. Whiteside, Lexington, and Bruce K. Johnson, Andover, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 960,062, Mar. 13, 1978, Pat. No. 4,192,587. This application Mar. 5, 1979, Ser. No. 17,425

Int. Cl.³ G03B *7/08, 3/10*

U.S. Cl. 354—27 **3 Claims**



1. A camera for use with a source of artificial illumination comprising:

means for defining a film exposure plane;

sonic ranging means for providing an output signal upon receipt of an echo from a subject to be photographed indicative of an elapsed time period corresponding directly to the distance between said camera and the subject to be photographed;

an objective lens arrangement;

means for mounting said objective lens arrangement for displacement between a plurality of different focal positions, said objective lens arrangement being adapted to focus an image of any subject located at a different distance from said camera within a given range of distances at the film exposure plane of said camera at each of its said focal positions;

means for displacing said objective lens arrangement through said plurality of focal positions and for stopping said objective lens arrangement in response to said output signal from said ranging means at a focal position at which said objective lens arrangement would focus an image of the photographic subject at said film exposure plane;

means for controlling a photographic exposure interval including a shutter blade mechanism and means for mounting said blade mechanism for displacement between at least one arrangement wherein it blocks scene light from reaching the focal plane and another arrangement wherein it defines a maximum size aperture, said blade mechanism serving to define a range of progressively increasing sized apertures for admitting scene light to said film exposure plane as it moves from its said scene light blocking arrangement toward its said scene light admitting arrangement; and

circuit timing means responsive to said output signal from said ranging means for providing a flash fire signal to initiate the energization of the source of artificial illumination at an instant subsequent to the initiation of the exposure interval specifically timed to coincide with the instant at which said shutter blade mechanism defines and exposure aperture corresponding to the camera-to-subject distance, said exposure control means also comprising means for detecting and integrating scene light in correspondence with the scene light admitted to said film exposure plane during said exposure interval, means for automatically terminating said exposure interval upon the detection and integration of a quantity of scene light admitted to said film exposure plane corresponding to a select proportion of a select film exposure value and means responsive to said flash fire signal for controlling said scene light detecting and integrating means to discount the artificial illumination provided by the source of artificial illumination such that said select porportion of said select film exposure value is directly attributable to ambient scene light while the remaining porportion of said select film exposure value is directly attributable to artificial scene light provided by the source of artificial illumination.

4,315,677

CALIBRATION ARRANGEMENT FOR EXPOSURE CONTROL SYSTEM

Bruce K. Johnson, Andover, and George D. Whiteside, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jul. 3, 1980, Ser. No. 165,510

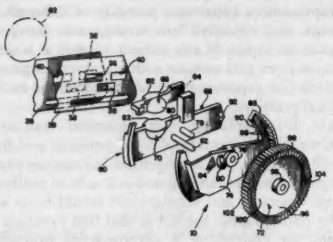
Int. Cl.³ G03B *7/08*

U.S. Cl. 354—49 **10 Claims**

1. In a photographic camera having scene light evaluating means for controlling a camera shutter to provide an appropriate exposure of given film material, the evaluating means including photoresponsive regions having different photoresponsive characteristics, and means for adjusting the intensity of scene radiation incident upon said regions for calibrating said evaluating means to provide a predetermined response for given scene light conditions, the improvement wherein:

said adjusting means includes first means movable into radiation intercepting relation with respect to both said regions to substantially precisely adjust an output of one of said regions while also coarsely adjusting an output of the

other of said regions under a given scene light condition, and second means movable into radiation intercepting



relation with respect to only said other region to, in combination with said first means, substantially precisely adjust the output of said other of said regions.

4,315,678

ELECTRICAL SHUTTER OF ELECTROMAGNETIC RELEASE TYPE FOR CAMERA HAVING ADJUSTABLE DELAY CIRCUIT FOR ADJUSTING THE PRECISION OF THE ELECTRICAL SHUTTER

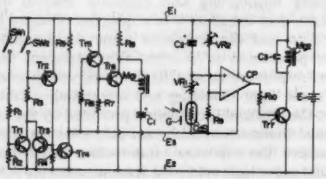
Katsuhiko Tsunefuji, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

Continuation of Ser. No. 25,876, Apr. 2, 1979, abandoned, which is a division of Ser. No. 934,480, Aug. 17, 1978, Pat. No. 4,183,646. This application Feb. 6, 1981, Ser. No. 231,950

Claims priority, application Japan, Nov. 15, 1977, 52/153240

Int. Cl.³ G03B *7/083*

U.S. Cl. 354—51 **7 Claims**



1. An electrical shutter of the electromagnetic release type for a camera comprising a charging member responsive to a film winding operation by rotating about a shaft to charge a prime mover spring which is used to drive the shutter, said shutter actuated by a shutter release and having a plurality of shutter blades, a shutter drive member adapted to rotate through substantially one revolution in response to an electromagnetic release to open and close the shutter blades, a locating member for maintaining the shutter drive member at rest at its start position, and an electrical shutter circuit including a shutter release electromagnet for opening the shutter which includes a permanent magnet and also including another control electromagnet which controls the closing operation of the shutter, the circuit automatically controlling a period of time during which the shutter blades are maintained open as a result of the rotation of the shutter drive member, the circuit including a time constant circuit which determines an exposure period of the shutter and commences operation when said shutter release is actuated and before said shutter opens, and means for slightly delaying the timing of energization of the control electromagnet for closing the shutter to compensate for a time lag involved with the operation of the release electromagnet for opening the shutter.

4,315,679

ADAPTER DEVICE

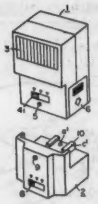
Zenzo Nakamura, Urawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 27, 1979, Ser. No. 79,598

Claims priority, application Japan, Dec. 25, 1978, 53-163545; Apr. 28, 1979, 54-57153[U]; Apr. 28, 1979, 54-57154[U]; Apr. 28, 1979, 54-57155[U]; Apr. 28, 1979, 54-57156[U]

Int. Cl.³ G03B *15/05, 17/18*

U.S. Cl. 354—128 **3 Claims**



1. An adapter device for use with a flash device and providing, through display means in a camera, a display for confirmation of light emission operation, comprising:

(a) terminal means connectable with a flash circuit in the flash device for receiving a light emission signal generated upon flashlight emission operation of a flash tube;

(b) signal forming circuit means connected to said terminal means and forming a confirmation signal in response to the light emission signal; and

(c) terminal means for transmitting the confirmation signal to said display means in the camera.

4,315,680

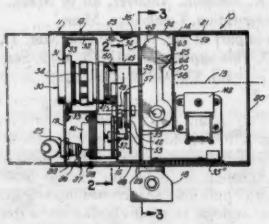
AUTOMATIC CAMERA

Norman R. Gunderson, Pasadena, Calif., assignor to American Electronics, Inc., Fullerton, Calif.

Division of Ser. No. 884,160, Mar. 7, 1978, Pat. No. 4,222,650. This application Apr. 21, 1980, Ser. No. 142,391

Int. Cl.³ G03B *17/04*

U.S. Cl. 354—195 **6 Claims**



1. A camera, comprising in combination:

an outer housing having at least one open end and containing a wall portion;

an inner housing containing photographic means, slidably mounted within the outer housing for movement relative thereto between an active position and a loading position, said inner housing including a wall portion;

a compartment in said inner housing for receiving a magazine containing film and having an open end;

a first passageway contained in said wall portion of the inner housing in communication with the open end of said compartment, which is of a size to pass a film magazine therethrough; and

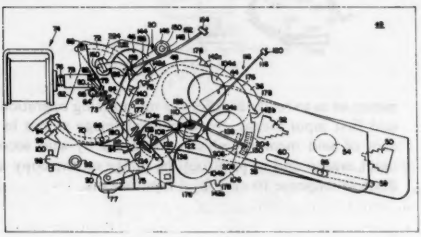
a second passageway in the wall portion of the outer housing of a size complimentary to that of said first passageway, said passageways being arranged in the walls of the respective housings whereby they are in alignment when the inner housing is in the loading position and are out of alignment when the inner housing is in the active position.

4,315,681

CAMERA WITH LENS DISC STOPPING SYSTEM

Kenneth J. Launie, Stoneham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 2, 1981, Ser. No. 222,012
Int. Cl.³ G03B *13/20;* F16H *53/00*
U.S. Cl. 354—197 **5 Claims**



1. A camera including an automatic lens focusing system for automatically focusing image forming light rays from a photographic subject at a camera film plane, said camera comprising:

means for generating and transmitting a sonic ranging signal and for providing an indication upon detection of an echo signal reflected from a photographic subject at an elapsed time, subsequent to transmission of said ranging signal, indicative of camera-to-subject distance;

a plurality of discrete lens elements each having a different focal length;

a disc for holding said plurality of lens elements in circumferentially spaced apart relation to each other for rotation about a center axis of said disc, rotation of said disc from an initial position operating to sequentially move each of said lens elements into position to focus an image onto the film plane of a photographic subject within a corresponding different camera-to-subject distance range, said disc including a peripheral section having a plurality of open outer end tang receiving notches therein extending generally inwardly from an outer edge portion of said peripheral section and being disposed in circumferentially spaced apart relation to each other, each of said notches being arranged in predetermined angular relation to a corresponding one of said lens elements and also being configured to include a leading side cam surface set at a cam angle with negative rake with respect to a radial line passing through an outer tip of said leading side cam surface, an oppositely spaced trailing side cam surface set at a cam angle with positive rake and extending further out in the radial direction than said leading side cam surface, a bottom surface, and a generally concave transition ramp surface extending between a lower portion of said trailing side cam surface and said bottom surface, said outer edge portion being at a constant radial distance from said axis between notches except in the vicinity of the outer ends of said trailing side cam surfaces where it protrudes outwardly to accommodate the extended portion of said trailing side cam surface;

means for effecting rotation of said disc away from said initial position so that each lens element reaches said focusing position at a time subsequent to the provision of a correlated echo signal indicating that the next lens element approaching the focusing position is appropriate for the corresponding camera-to-subject distance range;

means for biasing said disc for rotation back toward said initial position; and

means responsive to the provision of the correlated echo signal indication for stopping rotation of said disc to locate said corresponding lens element at said focusing position, said stopping means including a pawl mounted for pivotal motion toward and away from said peripheral section of said disc and having a tang configured to be releasably received in any one of said disc notches to stop disc rotation and inhibit further rotation until it is removed from said notch, said tang including a leading side surface having a positive rake angle that is greater than the cam angle of said trailing side cam surface of said notch, a trailing side surface having a negative rake angle that is greater than the cam angle of said leading side cam surface and a concave bottom surface, having a radius of curvature that is smaller than the radius of curvature of said disc outer edge portion between notches, joining the lower ends of said tang leading and trailing side surfaces and cooperating therewith to define leading and trailing end tang cam follower tips, the span between said leading and trailing tips being narrower than the width of said notch opening, said pawl being locatable at an initial disengaged position wherein said tang is spaced outwardly from said outer edge portion to allow rotation of said disc therepast and in response to said echo signal indication being actuable to pivot toward said disc so that at least one of said leading and trailing end tips engages said outer edge portion of said disc between adjacent notches ahead of an approaching one of said notches and rides therealong whereby said lens pawl is maintained in a stabilized condition due to the constant radius of said outer edge portion until said leading end tip of said tang is engaged by said extended portion of said trailing side cam surface of said approaching notch whereupon in response to further disc rotation toward said focusing position said leading end tip follows said trailing side cam surface and then said concave ramp section to effect camming action of said tang down into said notch to initiate stopping of disc rotation, said trailing end tip of said tang and said leading side cam surface also acting to cam said tang into said notch when engaged due to oscillating action of said disc responsive to abrupt disc deceleration when said tang enters said notch, said disc biasing means serving to bias said disc back toward said initial position to hold said leading side cam surface of said notch in contact with said trailing end tip of said tang located therein to accurately position said disc and thereby locate said corresponding lens element at said focusing position.

4,315,682

XEROGRAPHIC TONER FIXING STATION

Remo E. Parzanici, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 28, 1980, Ser. No. 182,153
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 FU **11 Claims**

11. An apparatus for applying tension to at least a portion of a sheet being advanced along a paper path comprising:

first, second and third rotatably mounted rollers; and

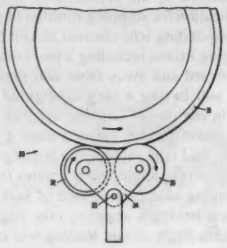
means for rotating said rollers to advance said sheet;

said first and second rollers being positioned in peripheral engagement for forming a first nip to receive a sheet from the paper path, and said first and third rollers being positioned in peripheral engagement for forming a second nip to receive sheets from said first nip;

said rollers further being positioned so that an advancing sheet enters said second nip before leaving said first nip;

said second roller having a lower peripheral speed than the

peripheral speed of said third roller whereby tension is applied to the sheet as it passes over the portion of the



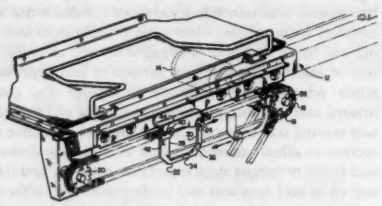
surface of said first roller between said first and second nips.

4,315,683

CAM YOKE FOR ELECTROPHOTOCOPIER RECIPROCATING CARRIAGE

Roderick N. Schmaling, Brookfield Center, and Warren E. Olson, New Canaan, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Sep. 2, 1980, Ser. No. 183,517
Int. Cl.³ G03G *15/28;* F16H *19/06*
U.S. Cl. 355—8 **4 Claims**



1. In an electrophotocopying machine having a reciprocating carriage driven by a constant speed chain having a drive pin coupled thereto, the improvement comprising a camming yoke fixedly connected to said reciprocating carriage and disposed in a plane parallel to the plane of the constant speed chain, said camming yoke having an opening therein to receive said drive pin, said opening being defined at its top and bottom by extended, substantially horizontal camming surfaces and at its sides by substantially vertical camming surfaces.

4,315,684

COPYING METHOD AND APPARATUS

Susumu Sugiura, Yamato, and Tadashi Sato, Kokubunji, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 17, 1979, Ser. No. 30,856
Claims priority, application Japan, Apr. 23, 1978, 53/48004
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **24 Claims**

19. Copying apparatus comprising:

means for setting an original document in a predetermined position for copying;

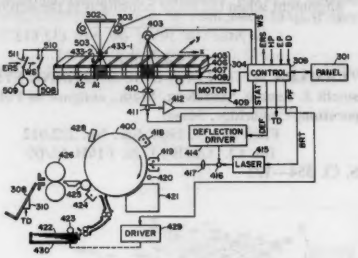
a memory;

memorizing means for causing a plurality of original document images to be stored in different areas of said memory, said memorizing means including first input means for initiating memorizing operations;

second input means for selecting one of the areas of said memory;

means for reading out the original image from said memory and printing the read out image on a copy medium, said read out and printing means including third input means for initiating printing operations; and

means for controlling said read out and printing means in response to said first, second and third instruction input



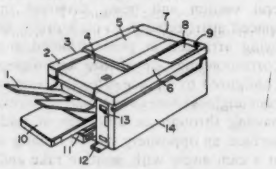
means so as to read out, after the memorizing operation of said first input means, the document image stored in an area of said memory which is selected by said second input means, and to print out the image on the copy medium in response to said third input means.

4,315,685

IMAGE FORMING APPARATUS

Tsuneki Inuzuka, Machida; Koichi Murakami, Tokyo; Kenji Kurita, Mitaka, and Hisashi Sakamaki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 21, 1979, Ser. No. 68,483
Claims priority, application Japan, Aug. 24, 1978, 53-103044; Aug. 24, 1978, 53-103048; Aug. 24, 1978, 53-103050; Aug. 31, 1978, 53-106736; Sep. 1, 1978, 53-107094
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 R **30 Claims**



6. An image forming apparatus comprising:

means for forming an image on a rotary member,

means for transferring a formed image onto a transfer member,

means for uniformalizing the surface condition of said rotary member,

switch means for connecting a power source to the apparatus, and

control means which, when said switch means is turned off before a completion of image formation and transference, stops the rotary member after making it rotate further for a predetermined period of time while keeping said uniformalizing means in operation.

4,315,686

EXPOSURE CONTROLS FOR PHOTOGRAPHIC COPY MACHINES

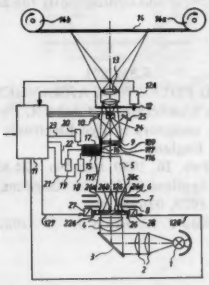
Berthold Fergg, Taufkirchem; Wilhelm Nitsch, München, and Mathias Pflugbeil, Baldham, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 24, 1980, Ser. No. 132,811

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1979, 2911523

Int. Cl.[3] G03B *27/80*

U.S. Cl. 355—38 6 Claims



1. In a machine for making photographic copies of color originals on photosensitive copying material, wherein the original is supported in a predetermined plane extending across the path of light from a light source to the copying material, wherein the duration of exposure of the copying material to copying light in several colors is selected by an automatic exposure control system, wherein a light intensity weakening device controls the intensity of light traveling in said path, and wherein an adjusting device adjusts the light intensity weakening device in dependency on the density of the original, the combination of normally closed shutter means interposed between said plane and the copying material; means for opening said shutter means for the duration of exposure as determined by the automatic exposure control system; and means for delaying the operation of said opening means for a predetermined interval of time whenever the weakening device is being adjusted by the adjusting means.

4,315,687

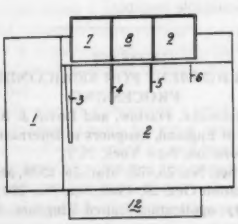
APPARATUS FOR COPYING FROM PLURAL SHEETLIKE ORIGINALS

Theo P. C. Breuers, and Johannes P. Hanegraaf, both of Venlo, Netherlands, assignors to Oce-Nederland B.V., Venlo, Netherlands

Filed Feb. 19, 1980, Se No. 122,119

Int. Cl.[3] G03

U.S. Cl. 355—75 9 Claims



1. Apparatus for copying plural sheetlike originals simultaneously comprising, in a photocopier including an exposure plate and means for producing on a sheet of receiving material a copy of sheetlike material exposed in copying position on said plate, a positioning surface on which a plurality of similarly sized sheetlike originals can be laid parallel to each other, means to abut and align the respective leading edges of such originals laid on said surface to a position making them ready to be copied, and transport means for feeding such originals so laid ready from said surface to said copying position for exposure and afterward away from said plate, said positioning surface having at least two distinct areas for separately receiving the originals and having thereon for each of said surface areas an arrest located at one side of the surface area, and at relatively the same side thereof as the arrest for each other of said surface areas, so that such plural originals respectively laid ready in said areas with respective lateral edges of the originals placed against the related arrests will be fed by said transport means to respective exact copying positions over said exposure plate.

4,315,688

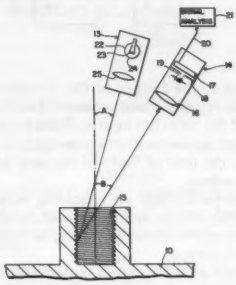
ELECTRO-OPTICAL SENSOR SYSTEMS FOR THREAD AND HOLE INSPECTION

Timothy R. Pryor, Tecumseh, Canada, assignor to Diffracto Ltd., Windsor, Canada

Filed Aug. 8, 1979, Ser. No. 64,867

Int. Cl.[3] G01B *11/22, 11/04*

U.S. Cl. 356—73 33 Claims



1. Apparatus for inspecting threaded objects comprising:

light source means for illuminating threads of a threaded object;

lens means for forming an image of at least a portion of the threads of a threaded object illuminated by said light source means;

means for detecting said image, said detecting means comprising a light sensitive member having a light sensitive area sufficiently small to resolve the individual threads in the image of the threads of an illuminated threaded object, said light sensitive member having an output signal responsive to light incident on said light sensitive area; and

means for analyzing said output signal to determine the quality of the threads of the threaded object.

4,315,689

SHOT SIMULATOR USING LASER LIGHT FOR SIMULATING GUIDED MISSILES

Wilfried Goda, Tinsdaler Kirchweg 229, 2000 Hamburg 56, Fed. Rep. of Germany

Filed Oct. 24, 1979, Ser. No. 87,735

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1978, 2846962

Int. Cl.[3] G01B *11/26;* F41F *27/00;* F41G *3/26*

U.S. Cl. 356—141 7 Claims

1. A shot simulator using laser light for simulating the shooting of sight guided missiles, comprising

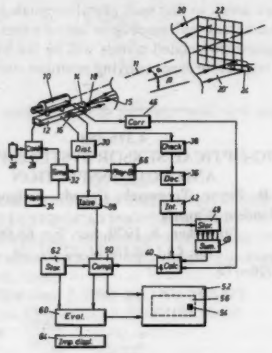
a sight for tracking a target,

a laser transmitter coupled to the sight for emitting laser light beams having different angular deviations from the line of sight and being characterized by different pulse codes,

a receiver for receiving laser light reflected from said target,

a decoder coupled to said receiver for decoding said pulse code of the reflected light and providing an output indicative of the momentary angular deviation of the target from said line of sight,

comparing means for comparing said momentary angular target deviation with stored maximum admissible deviation limits,



means coupled to the trigger of the simulated weapon for continuously repeating said emission of the laser light, said decoding of the reflected light and said comparison of the angular target deviation over a measurement period corresponding to the time of flight of the simulated missile,

hit indicating means,

and control means for said hit indicating means coupled to said comparing means and being responsive to the result of said comparison obtained during at least part of said measurement period,

so as to produce a hit indication only if said angular deviations have been within said stored limits during a sufficient portion of the total measurement period.

4,315,690

ARRANGEMENT FOR LOCATING RADIATING SOURCES

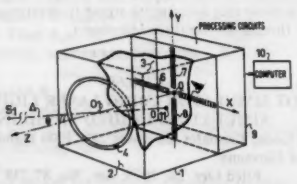
Roger Trocellier, and Jean C. Reymond, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Feb. 22, 1980, Ser. No. 123,816

Claims priority, application France, Feb. 27, 1979, 79 05004

Int. Cl.³ G01B *11/26*

U.S. Cl. 356—152 **9 Claims**



1. A sensor system for the location of radiation sources, comprising:

a housing provided with a front face forming an optical mask for admitting radiation from a source solely along transparent zones which define at least one circular shape, the transmitted radiation being consequently confined within a cone which has the source as its vertex and said circular shape as a section, said housing carrying a plurality of linear arrays of photosensitive elements disposed in an inner plane within said housing parallel to said optical mask to intercept at least three points of the projected circle corresponding to the said circular shape;

circuit means for processing the signals detected by said linear arrays and for identifying the positions of elements sensitized by the radiation transmitted through the optical mask; and

ancillary means for computing from photosensitive-element position identifications the coordinates of the said points and to deduce therefrom the coordinates of the center of the projected circle and consequently the angular location of the source.

4,315,691

CAM AND FOLLOWER ARRANGEMENT

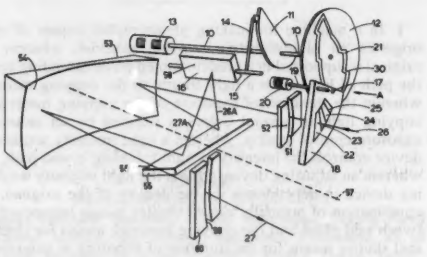
Charles V. Perkins, Cambridge, and John R. Firth, Silverstone, both of England, assignors to Pye Electronic Products Limited, Cambridge, England

Filed Feb. 26, 1980, Ser. No. 124,881

Claims priority, application United Kingdom, Mar. 2, 1979, 07535/79; Mar. 5, 1979, 07615/79

Int. Cl.³ G01J *3/12*; F16H *53/06*; G02B *7/00*

U.S. Cl. 356—331 **8 Claims**



7. A monochromator comprising, means for passing a beam of light through the monochromator, a device supporting a plurality of optical elements, and means for driving said device to position a selected one of said optical elements in the path of a light beam, and wherein said driving means comprises, a rotatable member supporting a cam having a surface that includes a track formed by walls with the track having at least one abrupt transition therein, a cam follower in engagement with the track, means including a direct current motor operative in a stalled condition for mechanically biasing the cam follower against one or the other of the walls of the track dependent upon the direction of rotation of the rotatable member, and means for controlling the polarity of the energizing voltage applied to the motor as a function of the direction of rotation of the rotatable member.

4,315,692

MASK ALIGNMENT FOR SEMICONDUCTOR PROCESSING

Rudolf A. H. Heinecke, Harlow, and David J. Moule, Saffron Walden, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 23,925, Mar. 26, 1979, abandoned. This application Oct. 29, 1980, Ser. No. 201,945

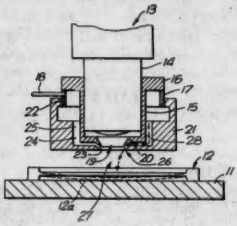
Claims priority, application United Kingdom, May 16, 1978, 19779/78

Int. Cl.³ G01B *11/00*; G03B *27/64*

U.S. Cl. 356—399 **3 Claims**

1. An apparatus for facilitating alignment of a flexible mask

with a semiconductor process wafer and adapted to be mounted on a cylindrical objective portion of a split field microscope, the apparatus comprising a tubular member of a diameter such that the member is a sliding fit on the objective portion, a cylindrical housing member mounted on the tubular member so as to define an annular cavity therebetween, and means for supplying gas to said cavity, in which the housing



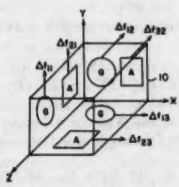
member has an opening into which the tubular member protrudes so as to define an orifice, the orifice being concentric with an objective lens of the microscope when the apparatus is fitted thereto, and in which the orifice is so dimensioned as to produce a gas stream creating a region of sufficient energy density to deform that portion of the mask disposed between the microscope objective and the process wafer into local soft contact with the semiconductor process wafer.

4,315,693

OPTICAL STRAPDOWN INERTIA SYSTEM

Clifford G. Walker, 915 Weatherly Rd., Huntsville, Ala. 35803

Filed Dec. 31, 1979, Ser. No. 108,972
Int. Cl.³ G01B 9/02
U.S. Cl. 356—350 **7 Claims**



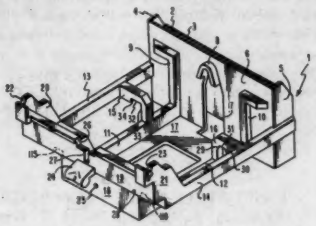
1. An optical strapdown inertial guidance system including:
a. A vehicle having a gyro and an accelerometer respectively mounted in three mutually perpendicular intersecting planes to sense acceleration components in each plane;
b. Said gyro including a passive ring Fabry-Perot interferemoter, and, a single frequency laser source to measure the difference in clockwise and counter clockwise lengths of the cavity caused by inertial rotation, electronic the cavity to resonance.
c. Said accelerometers comprising a single frequency laser source, a resonant cavity having a birefringent material therein, a proof mass carried by said birefringent material, a first polarizer for polarizing the laser beam, means disposed between said cavity and said polarizer for changing the optical frequency of the laser beam, focusing means for focusing the output laser beam from said cavity, detector means for receiving said output laser beam, feedback circuit means connected to said photo detector means and said SAW to vary the frequency of said laser beam.

4,315,694

CARRIER FOR PRINT ELEMENT AND RIBBON CARTRIDGES

Adolph B. Habich, and Ronald E. Hunt, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,649
Int. Cl.³ B41J 1/30
U.S. Cl. 400—144.2 **10 Claims**



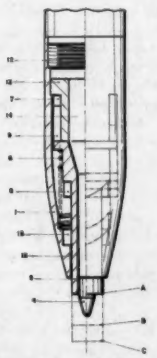
1. A carrier for both a ribbon cartridge and a print element cartridge, said carrier comprising:
(a) a vertically oriented print element cartridge receptacle located in the front of said carrier;
(b) means located in the top rear of said carrier for supporting said ribbon cartridge; and
(c) a plurality of hanging bracket means oriented horizontally between said receptacle and said supporting means for supporting said carrier on a number of adjustable eccentric rails of a printer carrier for translation toward and away from a printer platen and orientation relative to said printer platen.

4,315,695

INERTIA PEN WITH SLIDABLE SLEEVE

Antonio M. Alves dos Santos, and Helena Maria B. Alves dos Santos, both of Ferao Alvares do Oriente, 4-2° Dto., Lisbon, Portugal (1700)

Filed Nov. 16, 1979, Ser. No. 94,759
Claims priority, application Portugal, Nov. 20, 1978, 68804
Int. Cl.³ B43K 23/00, 27/00, 24/00
U.S. Cl. 401—99 **3 Claims**



1. An inertia pen comprising a hollow tubular shaped housing having at least one reduced tapered end, a tubular marking element removably and coaxially mounted within said tubular housing and having a marking tip on one end extending through said tapered end of said tubular housing in spaced coaxial relationship therewith, and an inertia mechanism comprising a tubular mass-calibrated sleeve member slidably and

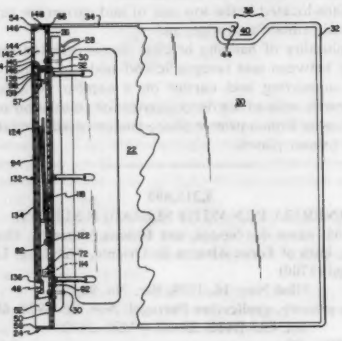
coaxially mounted within said tubular housing between said housing and said marking element, said sleeve member having a tip shielding portion extending through said tapered end of said housing surrounding said marking tip of said marking element, said sleeve member being axially movable between an outer non-marking position wherein said shield portion completely encloses said marking tip and an inner marking position wherein said shield portion is retracted to expose said marking tip, a spring means within said tubular housing interposed between said housing and said sleeve member to resiliently urge said sleeve member into the retracted position, guide means for guiding said sleeve member between said marking and non-marking positions, and stop means to releasably retain said sleeve member in said non-marking position so that said sleeve member may be operated by an impulse on said housing to selectively be moved into said marking or non-marking position.

4,315,696

EASEL-STYLE SUSPENSION BINDER

Albert G. Ermanski, Auburn, and David M. Wright, Shrewsbury, both of Mass., assignors to Wright Line Inc., Worcester, Mass.

Filed Apr. 18, 1980, Ser. No. 141,273
Int. Cl.³ B42F *13/00*; B42D *3/18*
U.S. Cl. 402—70 **11 Claims**



1. In a loose-leaf binder of the type having a rigid spine provided with a multiple ring device for releasably securing thereto appropriately punched stationery items and further having a pair of stiff covers of rectangular form hinged to said spine so as to be rotatable about a pair of parallel axes between a first closed position wherein said covers are in opposing and confronting relationship with one another and a second open position wherein said covers form an obtuse angle with one another, the improvement comprising:

a pair of congruent hook-shaped indentations in corresponding single edges of said covers, said single edges being normal to said axes and said identations being so disposed along said single edges as to fall opposite one another when said stiff covers are in said first closed position, said indentations further defining a hook portion and an opening, with said hook portions being between said openings and said spine, said indentations being situated eccentrically along said single edges so as to be remote from said spine;

a retractable jack hinged to said spine about an axis normal to said parallel axes so as to be movable between a retracted position parallel to said parallel axes and an extended position making an angle with a plane parallel to said parallel axes, said jack being of substantially rectangular form and being provided with a transparent label-holding cover, and said spine being of substantially rectangular open box-like construction dimensioned to accept said jack when said jack is in said retracted position so as to expose a view substantially only said transparent label holding cover of said jack;

a lock, comprised of a lock means on said spine and a lock pin on said jack which may be engaged with one another to secure said jack in said retracted position; and

a locking brace movably secured to said jack and said spine to secure said jack in said extended position;

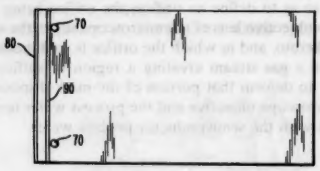
whereby when said jack is in said extended position and said binders are in said second open position, said binder may be supported on a surface by said jack, one end of said spine, and at least one of said covers with said spine inclined to said surface and said hooks remote therefrom.

4,315,697

CORE FOR A MODULAR FISCAL YEAR ACCOUNT BOOK

Louis Horowitz, 100 Kings Point Dr., Apt. # 1610, North Miami Beach, Fla. 33160

Continuation-in-part of Ser. No. 28,525, Apr. 9, 1979, abandoned. This application Mar. 14, 1980, Ser. No. 130,317
Int. Cl.³ B42D *5/00, 12/02*
U.S. Cl. 402—79 **3 Claims**



1. A core for a modular fiscal period account book comprising:

a multiplicity of sheets having a row of apertures disposed proximate one edge of each of said sheets,

a strip of thermo-setting adhesive disposed on at least one side of each of said sheets, intermediate the said apertures and the said one edge, and

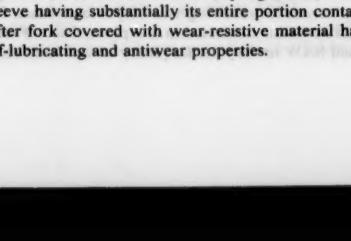
a strip of pressure-sensitive adhesive disposed on at least one side of each of said sheets, proximate said row of apertures for releasably bonding said multiplicity of sheets together.

4,315,698

COUPLING SLEEVE

Kotei Takahashi, Tokyo; Teruo Endo, Fujisawa; Masayuki Kawaguchi, Tokyo, and Kenichi Sakamoto, Fujisawa, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 12, 1979, Ser. No. 84,145
Claims priority, application Japan, Nov. 8, 1978, 53-138151
Int. Cl.³ F16B *7/06*; F16C *11/00*; F16G *11/12*; F16B *7/10*
U.S. Cl. 403—59 **8 Claims**



1. A rotatable coupling sleeve movable axially along a support with movement of a shifter fork engaged over a relatively small surface area thereof with said coupling sleeve, said coupling sleeve having substantially its entire portion contacting said shifter fork covered with wear-resistive material having high self-lubricating and antiwear properties.

4,315,699
MULTIWEDGE CONNECTOR

George E. Lusk, Woodstock, Ill., assignor to Joslyn Mfg. and Supply Co., Chicago, Ill.

Filed May 12, 1975, Ser. No. 576,731
Int. Cl.[3] H01B 17/02; F16B 2/00
U.S. Cl. 403—361 76 Claims

1. An end fitting having component parts capable of being assembled for providing an attachment to an elongated member comprising

a plurality of collets adapted to be positioned about said member and having a corresponding plurality of uninterrupted interior surfaces adapted to be spaced from said member,

elongated means adapted to be positioned about said member for receiving and retaining said plurality of collets about and spaced from said member in a serially disposed, coaxially aligned condition within said elongated receiving and retaining means and along the longitudinal axis of said member,

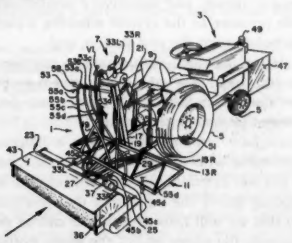
means adapted to be disposed between said plurality of collets and said member for filling substantially all of the spaces or voids between said member and said interior surfaces of said plurality of collets to thereby affix said end fitting to said member and

means adapted to coat said interior surface for avoiding the development of a bond between said interior surface and said filling means.

4,315,700
IMPLEMENT FOR APPLYING SEALANT TO ASPHALT PAVEMENT OR THE LIKE

Raymond W. Heiligtag, 1012 Palmer La., Imperial, Mo. 63052; Donald G. Heiligtag, 4696 Four Ridge Rd., House Springs, Mo. 63051, and Donald R. Heiligtag, R.R. 2, Box 110I, Barnhard, Mo. 63012

Filed Feb. 23, 1979, Ser. No. 14,416
Int. Cl.[3] E01C 19/16
U.S. Cl. 404—111 10 Claims

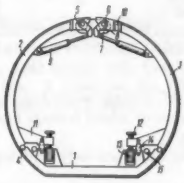


1. An implement or attachment for a tractor or other prime mover for the application of a liquid sealant to a pavement surface, said tractor having a 3-point hitch selectively movable between a raised and a lowered position for in turn raising and lowering said implement between a raised retracted position in which the implement is clear of the pavement surface and a lowered operative position, said implement having a frame adapted to be coupled to said tractor by means of said 3-point hitch, said frame extending generally transversely of the direction of travel of said tractor, a plurality of spray tubes spaced transversely along said frame for application of said liquid sealant to said pavement surface, a tank for holding a supply of said liquid sealant, a pump, conduit means interconnecting said tank, pump, and spray tubes for spraying of said liquid sealant under pressure onto said pavement surface, and a brush trailing said spray tubes rotatably driven about a horizontal axis and being engageable with said pavement surface for uniformly spreading said liquid sealant on said pavement surface and for forcing said sealing into cracks or voids in said pavement surface.

4,315,701
SHUTTERING FOR ERECTING A CONCRETE TUNNEL LINING

Valentin A. Ivanov, ulitsa Konstantinova, 4, kv. 25; Vladimir A. Khodosh, ulitsa Malaya Pirogovskaya, 27, korpus 1, kv. 11; Igor S. Ostrovsky, Otkrytoe shosse, 24, korpus 2, kv. 35; Mikhail Y. Shenkman, Otkrytoe shosse, 24, korpus 5g, kv. 37; Jury A. Koshelev, Ruzheiny pereulok, 4, kv. 123; Sergei N. Vlasov, Rizhsky proezd, 9, kv. 126, all of Moscow; Budu P. Pachulia, ulitsa Pavlova, 8a, kv. 4, Tbilisi, and Iosif D. Y. Fishman, ulitsa Mashinostroitelei, 13, kv. 20, Donetskaya oblast, Yasinovatskaya, all of U.S.S.R.

Continuation of Ser. No. 963,843, Nov. 27, 1978. This application Dec. 12, 1980, Ser. No. 215,736
Claims priority, application U.S.S.R., Jan. 6, 1978, 2565689
Int. Cl.[3] E21D 11/00, 5/12
U.S. Cl. 405—150 2 Claims



1. Shuttering for erecting a concrete tunnel lining, comprising: vault segments and a base segment which are pivotally interconnected and define a closed outline; a drive mechanism for stripping said segments off the tunnel lining; said drive mechanism mounted at the upper ends of said vault segments for rotation by a drive and comprising two parallel rotatably disposed shafts having cylindrical eccentrics which shafts are located at the upper ends of said vault segments and are interconnected by means of a connecting link having cylindrical holes at the ends thereof, said cylindrical eccentrics being mounted for rotation in said cylindrical holes in said link such that rotation of said shafts causes the vault segments to close inwardly.

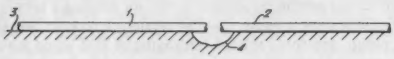
4,315,702
METHOD FOR ALIGNING TWO PIPELINE ENDS AND APPARATUS FOR CARRYING OUT THE METHOD

Per J. Moe, Nesbru; Helge Carling, and Leif H. Eriksen, both of Oslo, all of Norway, assignors to Odd Berg, Tromsø, Norway

Continuation of Ser. No. 903,216, May 5, 1978, abandoned. This application Nov. 13, 1979, Ser. No. 93,877
Claims priority, application Norway, May 9, 1977, 771626
Int. Cl.[3] F16L 1/00
U.S. Cl. 405—170 12 Claims

1. In a method for aligning two pipeline sections submerged in the sea by using a frame open towards the bottom of the sea,

which frame is brought into position in the area of the pipe section ends and which for each pipe end is equipped with a set of holding/fulcrum means displaceable relative to the frame for coming into engagement with the pipe ends, a first holding-/fulcrum means in each set functioning as a restraining force for the respective pipe end, and a second holding/fulcrum means being operable for displacement and alignment of the pipe end, comprising displacing and aligning the pipe ends by



the holding/fulcrum means and at the same time allowing the frame to be displaced realtive to the sea bottom and the pipe ends, by engaging the holding/fulcrum means with the pipe ends and applying a force to align the pipe ends, and utilizing the restraining forces which are produced by said alignment force for displacing the frame relative to the sea bottom and the pipe ends, so that the frame and the pipe ends can adopt a relative position whilst forming a finished aligned pipeline curve having as large a radius of curvature as possible.

4,315,703

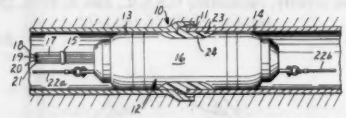
SEALING METHOD USING LATEX-REINFORCED POLYURETHANE SEWER SEALING COMPOSITION

Alton J. Gasper, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jun. 25, 1979, Ser. No. 51,878

Int. Cl.[3] **C08G** *18/12, 18/14;* **E02B** *3/16;* **E02D** *3/12*

U.S. Cl. 405—264 **7 Claims**



1. A method of sealing water-bearing or water-holding structures to prevent or inhibit leakage into or from said structures, comprising:

(A) substantially simultaneously applying at the locus of said leakage

(1) a fluid mixture comprising water-soluble polyurethane prepolymer having terminal isocyanate groups formed by reacting

(i) polyether polyol having at least two terminal hydroxyl groups and a number average molecular weight between about 3,000 and 20,000 and having random ethylene oxide units and higher alkylene oxide units in a mole ratio of ethylene oxide to higher alkylene oxide of 1:1 to 4:1, wherein said higher alkylene oxide is selected from a group consisting of propylene oxide, butylene oxide, pentylene oxide, hexylene oxide and mixtures thereof, and

(ii) sufficient polyisocyanate compound having at least two terminal isocyanate groups to provide an NCO-:OH ratio of about 5:1 to about 1.05:1;

(2) sufficient aqueous polymeric latex containing particulate polymeric material having an average particle size in the range of about 0.01 to about 10 microns to provide a weight ratio of prepolymer to polymeric material in latex form of about 100:1 to 1:1; and

(3) sufficient water to provide a weight ratio of water to prepolymer on the order of 5:1 to 20:1 and to provide a viscous mass having a viscosity in the range of about 5 to about 1,000 cps when measured with a Brookfield RVT Viscometer at 25° C. using a standard No. 3 spindle and rotated at 20 rpm

(B) permitting the components to react.

4,315,704

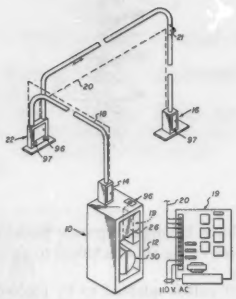
SINGLE LINE PNEUMATIC TUBE SYSTEM

Charles K. Kelley, and William W. Jones, both of Houston, Tex., assignors to Charles K. Kelley and Sons Inc., Houston, Tex.

Division of Ser. No. 38,168, May 11, 1979, Pat. No. 4,251,169, which is a continuation of Ser. No. 876,112, Feb. 3, 1978, Pat. No. 4,189,261. This application Oct. 8, 1980, Ser. No. 195,153

Int. Cl.[3] **B65G** *51/32*

U.S. Cl. 406—12 **7 Claims**



1. A single line, pressure-vacuum pneumatic tube system comprising:

a central station having a terminal to dispatch or receive a carrier, pressure-vacuum power means providing pressure and vacuum, means selectively connecting the power means to the terminal to provide pressure or vacuum to the terminal, means energizing the power means and the selectively connecting means;

an end station having a terminal to receive or dispatch a carrier;

at least one intermediate station having a terminal to receive or dispatch a carrier;

a single line of tubing connecting the terminal of the central station with the terminal of the intermediate station;

a single line of tubing connecting the terminal of the intermediate station to the terminal of the end station;

the intermediate station provided with means to energize the power means and selectively connecting means to provide vacuum to the system whereby a carrier may be dispatched toward the central station and means to energize the power means and selectively connecting means to provide pressure to the system whereby a carrier may be dispatched toward the end station; and

the end station provided with means to energize the power means and selectively connecting means to provide vacuum to the system whereby a carrier may be dispatched toward the intermediate terminal;

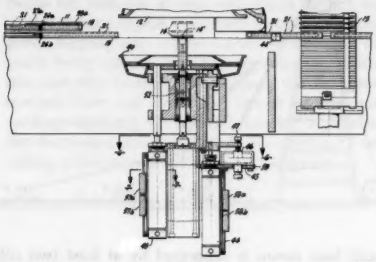
the intermediate terminal comprising a housing having a roof provided with two spaced ports, each port having a guide portion extending downward into the housing and terminating above the bottom of the intermediate terminal, so that air will flow around the carrier positioned in the housing, the upper end of the guide portion having a cylindrical portion extending downward into the intermediate terminal to facilitate insertion of the carrier for transmission, the intermediate terminal receiving and transmitting carriers in either direction.

4,315,705

APPARATUS FOR HANDLING AND TREATING WAFERS

Alan G. Flint, Los Gatos, Calif., assignor to GCA Corporation, Bedford, Mass.

Filed Mar. 18, 1977, Ser. No. 779,075
Int. Cl.³ B65G *51/02*
U.S. Cl. 406—73 **5 Claims**



1. A wafer processing system including a processor for treating wafers which are automatically sequenced through said processor said processor having means for retaining each of said wafers during treatment said system comprising: a shuttle with back and forth movement having an upper slide and a lower slide the upper slide being spaced from the top of the lower slide a parallel distance greater than a wafer thickness, said upper slide having wafer positioning means for locating a wafer on said retaining means; send track means for supplying wafers to said processor and receive track means for receiving treated wafers, said send track means being coplanar with the top of said upper slide and said receive track means coplanar with the top of said lower slide; means for moving said shuttle to place said upper slide in close proximity to said send track means, to place said lower slide in close proximity to said receive track means, and to position a wafer on said upper slide in proximity to said retaining means; and means for moving said retaining means in a direction perpendicular to said shuttle movement, to up, down and strip positions where said up position is above the top of said upper slide, the down position is substantially even with said parallel space between slides and said strip position is below the top of said lower slide.

4,315,706

HOLDER ASSEMBLY FOR AN INDEXABLE INSERT FOR USE IN A CUTTING TOOL

Donald S. Erkfritz, Clarkston, Mich., assignor to General Electric Company, Columbus, Ohio

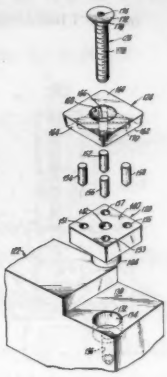
Filed Apr. 7, 1980, Ser. No. 137,998
Int. Cl.³ B26D *1/12, 1/00*
U.S. Cl. 407—101 **5 Claims**

1. In a metal cutting tool having an elongated body, a holder assembly including a cutting insert, said holder assembly comprising:

a support member secured to said cutting tool, said support member including a platform and having a central aperture disposed normal to the plane of said platform, said platform including a first interlocking means comprising four longitudinally extending keys, each having a generally cylindrical configuration;

a generally planar cutting insert having a central aperture disposed normal to the planer surfaces thereof, with one planar surface of said insert disposed in abutting relationship with said platform of said support member such that said apertures are in register, and with the planar surface of said insert which is abutting said platform further including a second interlocking means, said second interlocking means being interengaged with said first interlocking means of said platform, said second interlocking means comprising a receiving groove which is cross-shaped in cross section, said keys and receiving groove being symmetrically arranged such that said insert may be indexed; and

screw means extending through said apertures for holding said cutting insert in abutting relationship with said platform of said support member, whereby said first and second interlocking means remain interengaged and function to restrict the unwanted rotational movement of said insert about the axis of said screw means during use of the cutting tool.

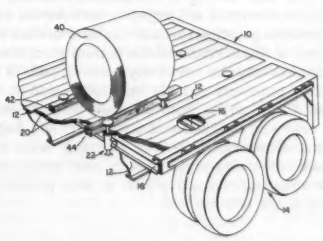


4,315,707

VEHICLE LOAD SUPPORTING ARRANGEMENT

James L. Fernbach, 3882 Struble Rd., Cincinnati, Ohio 45247

Filed Mar. 3, 1980, Ser. No. 126,655
Int. Cl.³ B60P *7/12;* **B61D** *3/16, 45/00*
U.S. Cl. 410—47 **8 Claims**

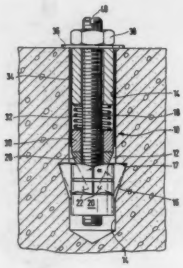


1. The combination of a vehicle including a frame having a plurality of beams, a supporting surface on the beams, and spaced timbers mounted on the supporting surface with a plurality of back-up assemblies, each of the back-up assemblies including an upright support member mounted on one of the beams, an upright sliding member slidably mounted on the support member for up and down sliding movement, and an integral cap plate at an upper end of the sliding member for movement between a lowered and a raised position, the sliding member engaging a side of one of the timbers mounted on the supporting surface to hold the timber in a load supporting position with the cap plate resting on the timber, a load being adapted to engage the other side of the timber to hold the timber against the sliding member.

4,315,708
POSITIVELY LOCKING TOGGLE

Heinrich Liebig, Wormser Str. 23, 6102 Pfungstadt, Fed. Rep. of Germany

Filed Feb. 20, 1980, Ser. No. 122,868
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1979, 2906914
Int. Cl.[3] F16B *13/06*
U.S. Cl. 411—65 15 Claims



1. A toggle for form-locking placement in a bore having an orifice and a radial circumferential undercut surface, said toggle having a toggle body introducible into the bore and corresponding substantially to the diameter of the bore, locking elements mounted on said toggle body and having ends pointing outwardly towards the bore orifice, said ends being rockable from a retracted position located within the diameter of the bore to an outspread, locking position in which they project radially at least partially beyond the diameter of the toggle body and catch lockingly on the undercut surface of the bore, means for holding said locking elements in retracted position until at least partial insertion of the elements into the bore, said toggle body being a bottom piece of relatively short length disposed on the bore-internal end of an elongated fastening bolt, on which bottom piece the bore-internal ends of locking elements, closed together to form a relatively thick-walled cylindrical sleeve surrounding the fastening bolt, are seated, said fastening bolt bearing means threaded onto the fastening bolt and having a component conically tapering towards the bore interior and engaging between the ends of the locking elements pointing towards the bore orifice, said component, upon a displacement of the bottom piece towards the bore orifice, rocking the outwardly pointing ends of the locking elements positively radially outwardly, and at least one sleeve and a coil spring, both disposed between said means threaded onto said bolt and said component and disposed for longitudinal displacement on the fastening bolt, means for placing said coil spring under bias by axial compression, and means for releasing said spring after at least partial introduction of the toggle into the bore.

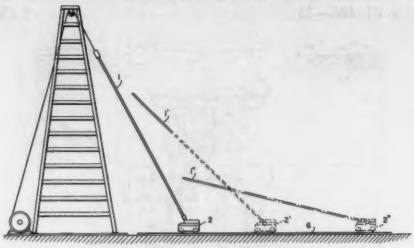
4,315,709
APPARATUS FOR TRANSPORTING THE MALE ENDS OF THREADED TUBING, PIPE, OR THE LIKE

Jonathan F. Gulick, Philadelphia, Pa., assignor to Cities Service Company, Tulsa, Okla.

Filed Mar. 17, 1980, Ser. No. 130,649
Int. Cl.[3] E21B *19/14*
U.S. Cl. 414—22 5 Claims

4. An apparatus for protecting the threaded male end of tubing, pipe, casing, or the like, in drilling for subterranean substances, while displacing said tubing, pipe, casing, or the like, to or from a generally vertical posture in a drill hole to or from a horizontal placement for storage of same, said apparatus comprising a trough means superimposed on a base supported by rolling means, and wherein

(a) said trough means incluades a pair of slanting side walls, a back wall and a front wall attached to said slanting side walls, said front wall having a structure defining a semi circular aperture which accepts said tubing, pipe, casing, or the like, and means are included in said trough which engage with said male end and prevent movement during transport thereof, and

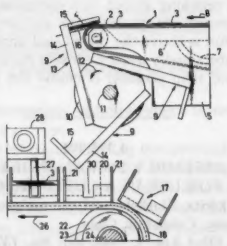


(b) said base means is supported by at least two rolling means, rotatably secured to said base and said trough is closer to one of said rolling means than the other said rolling means, and said rolling means are adapted to permit rolling of said apparatus along a storage floor or along a layer of previously stored tubing, pipe, casing, or the like.

4,315,710
COLLATING DEVICE FOR FLAT GOODS, PARTICULARLY CARDS

Jean-Marie de Somer, Turnhout, Belgium, assignor to Carta Mundi, Turnhout, Belgium

Filed Nov. 2, 1979, Ser. No. 90,707
Claims priority, application Belgium, Nov. 3, 1978, 871738
Int. Cl.[3] B65G *57/30*; B65H *31/30*
U.S. Cl. 414—47 27 Claims



1. A collating device for flat goods, particularly cards, comprising:

an endless conveyor with at least one conveying strip for bearing said goods, said flat goods being fed along the top side of said conveying strip;

at least one collecting member mounted facing a discharge end of said endless conveying strip to collect said goods leaving said conveying strip to be collated, said at least one collecting member having a first portion, said first portion at least during the collecting of goods, being a stop therefor, and a second portion connected transverely to said first portion and positioned relative to said top side of said conveying strip at an angle to the movement direction of said top side, said second portion having a free end which is spaced apart from said top side leaving a gap between said top side and said free end, said goods fed on said top side passing through said gap and striking said second portion and tilting about an axis transverse to the movement of said conveying strip;

a clamping mechanism to retain said goods at least temporarily against said second portion, said goods being stopped against said first portion and forming an angled surface of said gap;

means for positively retaining said flat goods on said at least one conveying strip for movement therewith while said conveying strip bears said flat goods on said top surface to said discharge end, said conveying strip and associated means for retaining driving said goods beyond said discharge end and against one of said second portion and said goods forming said angled surface of said gap, said flat goods being collated in a stack between said second portion and said clamping mechanism, the flat goods discharged from said strip being forced between said preceeding collated goods and said clamping mechanism, said last discharged goods displacing the position of said preceding goods in said stack of collated goods.

4,315,711

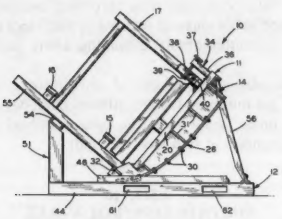
TILTING SUPPORT PACKING APPARATUS

Joseph G. Koscho, Modesto, Calif., assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Dec. 7, 1979, Ser. No. 101,122

Int. Cl.³ B65G *57/28*

U.S. Cl. 414—97 **10 Claims**



1. A portable, manually rockable packing stand for carrying and tilting a sheet article shipping container between an upright transporting attitude and an inclined container packing attitude, comprising:

a. a base frame adapted to rest upon a supporting surface and including means by which said base frame can be engaged for lifting and transporting said packing stand;

b. a pair of spaced-apart, parallel track members affixed to said base frame;

c. a rectangularly shaped rockable frame carried by said base frame and including means for receiving the supporting legs of said shipping container, said rockable frame receiving said shipping container in an upright loading/unloading position and being manually movable between said upright position and a container packing position;

d. a pair of spaced-apart curved rocker members affixed to the underside of said rockable frame, each of said rocker members riding on a corresponding one of said parallel track members;

e. cooperating means on said track and rocker members confining said rocker members to rolling linear movement along said track members; and

f. said rocker members being configured to provide a shifting fulcrum point remaining substantially beneath the center of gravity of said rockable frame and shipping container carried thereon as they are tilted whereby said rockable frame and shipping container are capable of being manually moved back and forth between said loading/unloading position and said packing position.

4,315,712

LOADING METHOD AND DEVICE FOR FEEDING WASTE-FILLED CONTAINERS INTO A ROTARY INCINERATOR

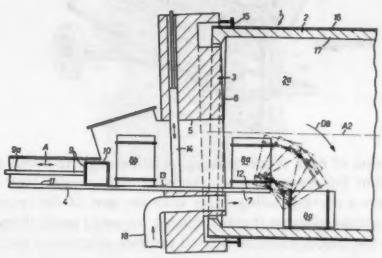
Werner Seglias, Erlenbach, Switzerland, assignor to Von Roll AG, Gerlafinger, Switzerland

Filed Oct. 10, 1979, Ser. No. 83,283

Claims priority, application Switzerland, Oct. 13, 1978, 10673/78

Int. Cl.³ F23K *3/00*

U.S. Cl. 414—149 **16 Claims**



1. A loading method for feeding waste-filled containers into a rotary incinerator, said method comprising the steps of:

placing a waste-filled, open topped container on a slide;

feeding the waste-filled container along the slide through a loading opening in an end wall of the incinerator;

positioning the waste-filled container on a loading and dumping platform projecting into a drum of the rotary incinerator;

allowing the waste-filled container to stand on the loading and dumping platform exposed to heat within the drum for a predetermined loading time interval; and

tipping the waste-filled container off the loading and dumping platform onto a floor of the drum at the end of the predetermined loading time interval.

3. A loading device for feeding open-topped, waste-filled containers into a rotary incinerator, said incinerator comprising a stati[illegible]nd wall, a stationary inner wall, a rotary drum, and a loading opening through said end wall and said inner wall to said drum, wherein the improvement comprises:

a loading and dumping platform projecting from the stationary inner wall and extending sufficiently far into the rotary drum above a drum lower wall as to encounter intense heat within said drum;

slide means merging with said loading and dumping platform at the stationary end wall; and

reciprocating means in contact with said slide means for feeding waste-filled containers sequentially onto the loading and dumping platform, for allowing each waste-filled container to stand on the loading and dumping platform exposed to heat within the drum for a predetermined loading time interval, and for tipping each waste-filled container from the loading and dumping platform and onto a floor of the drum after passage of the predetermined loading time interval.

4,315,713

APPARATUS FOR GENERATING ENERGY FROM A FLOWING MEDIUM

Mattheus W. Verplanke, C.10 Zachariaspolder, Ijzendijke (Zeeland), Netherlands

Filed Sep. 21, 1979, Ser. No. 77,540

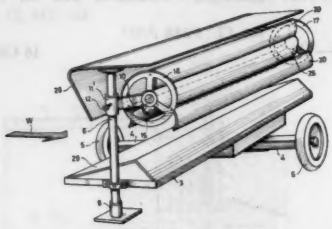
Claims priority, application Netherlands, Sep. 27, 1978, 7809790

Int. Cl.³ F03D *3/04*

U.S. Cl. 415—2 R **6 Claims**

1. Apparatus for generating energy from a flowing medium,

comprising a frame, a rotatable rotor supported on the frame, the rotor being comprised of two spaced apart, parallel wheels, oblong blades being suspended between the wheels, connection elements supporting and suspending the blades between the wheels and rotatably mounting the blades to the wheels, each wheel having a respective axis of rotation and the axis of



rotation of each wheel making an acute angle (α) with a connection line between the centers of the wheels, each blade covers a corresponding angle with the part of the respective connection element that is rotatably mounted in the wheels, so that the blades maintain a fixed position relative to the frame during the rotation of the rotor, and a cover partially screening off the rotor from the flowing medium.

4,315,714

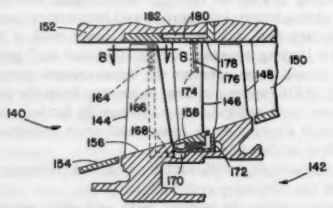
ROTARY COMPRESSORS

John T. Exley, Milford; Charles Kuintzle, Jr., Monroe, and David L. Tate, Stratford, all of Conn., assignors to Avco Corporation, Stratford, Conn.

Division of Ser. No. 795,058, May 9, 1977, Pat. No. 4,164,845, and a continuation-in-part of Ser. No. 515,115, Oct. 16, 1974, abandoned. This application Dec. 18, 1978, Ser. No. 970,416

Int. Cl.³ F04D 29/54

U.S. Cl. 415—207 **3 Claims**



1. A compressor stage for pressurizing compressible fluids in a gas turbine engine comprising:

a bladed axial flow impellar, said impellar comprising: a plurality of equally spaced blades mounted about the circumference of a rotor and extending radially outward therefrom, said impellar mounted for rotation within a cylindrical impellar shroud, each of said blades forming a passageway for the axial flow of fluid in conjunction with its adjacent blades;

a flow equalizing system for stabilizing the flow of fluid through the passageways formed by the blades comprising: slots constructed in the outer portion of each blade along a line of equal pressure within the compressor and extending into the blade to communicate with radially inward extending channels constructed within each blade, and a closed manifold chamber constructed within the rotor to interconnect each channel thereby by forming a closed flow system interconnecting each blade passageway.

4,315,715

DIFFUSER FOR FLUID IMPELLING DEVICE

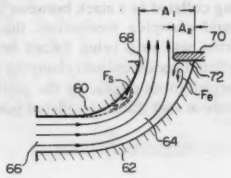
Fumio Nishiguchi, Yokohama; Masataka Ueno, and Masanobu Kimura, both of Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 8, 1979, Ser. No. 46,992

Claims priority, application Japan, Jul. 26, 1978, 53-101775[U]

Int. Cl.³ F01D 9/00

U.S. Cl. 415—207 **6 Claims**



1. A diffuser for a fluid impelling device, comprising: outer and inner casing members radially spaced apart from each other and forming therebetween a diffuser chamber having a gas inlet end open axially and a gas outlet end open circumferentially, said diffuser chamber being of annular cross-section increasing toward said gas outlet end and gradually enlarging with curvature toward said gas outlet end; and

flow throttling means for throttling said diffuser chamber at said gas outlet end, said flow throttling means including a ring-shaped baffle element secured to said inner casing member and circumferentially extending along said gas outlet end;

in which the cross-sectional area of said diffuser chamber at the throttled gas outlet end of the diffuser chamber is about two to three times larger than the cross-sectional area of the diffuser chamber at said gas inlet end.

4,315,716

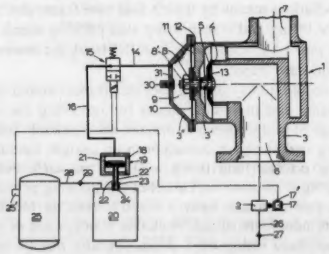
SUCTION CONTROL VALVE

Pieter A. de Backer, Grouw, Netherlands, assignor to de Backer's Compressoren B.V., Netherlands

Filed Dec. 5, 1979, Ser. No. 100,546

Int. Cl.³ F04B 49/08

U.S. Cl. 417—27 **7 Claims**



1. A suction control valve adapted to be connected to the suction side of a compressor and comprising a valve housing, in which a valve seat is formed, which co-operates with a valve body which, in its opened position, brings the suction side of the compressor into open communication with the atmosphere, said valve body being attached to a valve stem which, in its longitudinal direction, is slidably guided in the valve housing for the displacement of the valve body from the closed position to the open position, and vice versa, while a continuous bore in the valve stem is at one end in open communication with the

suction side of the compressor, and opens at the other end into a diaphragm chamber, which is located on the side of a diaphragm facing away from the valve body, which diaphragm is fixed to the valve stem, while the diaphragm chamber is connected to a conduit, which accommodates a stop valve.

4,315,717

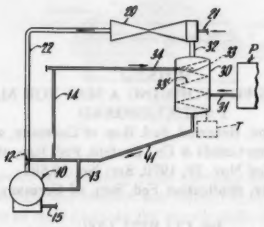
EVACUATION SYSTEM WITH PRECONDENSER

Stephen J. King, Clearwater, Fla., assignor to The Nash Engineering Company, Norwalk, Conn.

Filed Nov. 19, 1979, Ser. No. 95,760

Int. Cl.³ F04C *19/00*

U.S. Cl. 417—69 **10 Claims**



1. In a system for evacuating process fluid having liquid and gaseous phases and in which there is provided a liquid ring pump having a seal liquid inlet and suction and discharge portions and forming a second stage of the system, a jet diffuser having inlet and outlet portions and forming a first stage of the system, the outlet portion of the jet diffuser communicating with the suction portion of the liquid ring pump via a diffuser-to-pump conduit, a supply conduit communicating with and feeding motivating fluid to the inlet portion of the jet diffuser, separating means for separating out and condensing the liquid phase of the process fluid being evacuated and for separating out the gaseous phase of the process fluid being evacuated, said separating means having a process fluid inlet, a gaseous phase outlet and a liquid phase outlet, the gaseous phase outlet communicating with the inlet of the jet diffuser via a separator-to-diffuser conduit, the liquid phase outlet of the separator communicating with the suction portion of the liquid ring pump via a separator-to-pump conduit; the improvement in which the supply conduit communicating with and feeding motivating fluid to the inlet of the jet diffuser communicates with and supplies atmospheric air to the diffuser; the improvement further comprising a liquid supply external to the system communicating with the liquid ring pump seal liquid inlet and delivering cooling liquid to the separator via a liquid supply-to-separator conduit which terminates within the separator in a spray nozzle; and wherein the separator-to-pump conduit terminates at the suction portion of the pump in a spray nozzle.

4,315,718

PERISTALTIC PUMP AND BEARING ARRANGEMENT THEREFOR

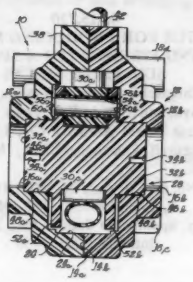
Lawrence R. Hogan, Lake Ville, Ill., assignor to Cole-Parmer Instrument Company, Chicago, Ill.

Filed Sep. 17, 1979, Ser. No. 76,387

Int. Cl.³ F04B *43/12, 45/08*

U.S. Cl. 417—477 **7 Claims**

1. In a peristaltic pump which includes a housing having an internal chamber defined in part by a reaction surface, a rotor rotatably supported by said housing within said chamber, said rotor including a pair of longitudinally spaced radial flanges, and at least one compression surface supported by and between said flanges for rotation with said rotor, said rotor and reaction surface being cooperative upon rotation of said rotor to effect a peristaltic pumping action on a compressible fluid flow tube when disposed between said rotor and said reaction surface; the improvement wherein said compression surface is defined by a compression roller having a cylindrical longitudinal bore therethrough, and including a tubular cylindrical noncompressible support shaft received through said bore in direct supporting relation with said roller so as to enable rotation of said roller on said support shaft, said support shaft having a relatively high heat transfer coefficient and having open opposite ends fixedly received within axially aligned bores in said flanges so as to be supported by and between said flanges, said support shaft and said flanges establishing an open fluid flow passage through said support shaft so as to enable fluid flow therethrough to dissipate heat generated by rotation of said roller on said support shaft.



4,315,719

NON-LUBRICATED ROTARY PUMP WITH DISCHARGE THROUGH END HEADS

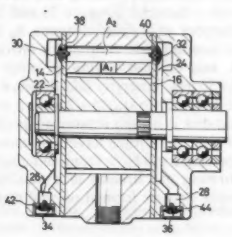
Hiroshi Sakamaki, Utsunomiya; Toshiyuki Maeda, Ageo; Fumihiro Ushijima, Toyata, and Tadashi Saitou, Toyota, all of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo and Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, both of, Japan

Filed Oct. 12, 1979, Ser. No. 84,206

Claims priority, application Japan, Oct. 26, 1978, 53-147624[U]

Int. Cl.³ F04C *27/00*

U.S. Cl. 418—15 **9 Claims**



1. A rotary fluid pump of a non-lubrication type comprising: a stator housing having a generally cylindrical cavity extending therethrough, a pair of fixed recessed end heads assembled at opposite ends of the housing to form a pump cavity with said stator housing, a drive shaft journalled in said end heads and extending eccentrically into the interior of the pump cavity, a rotor mounted on said drive shaft within the pump cavity, a pair of resilient sealing plates individually disposed between ends of said stator housing and said end heads and dividing said pump cavity into a pair of end chambers defined by said recessed end heads and said plates and an intermediate rotor chamber defined by said plates, a plurality of vanes slidably disposed in an equal plurality of grooves radially formed in the rotor, outlet port means in said housing for completing a fluid

communication path between said rotor chamber and at least one discharge hole formed at a lower portion of at least one of said end chambers whereby fluid passage, under the outlet pressure of the pump, is provided through said rotor chamber, said outlet port means, said end chamber and said discharge hole to discharge fluid, containing wear particles from the vanes, to the atmosphere.

4,315,720

APPARATUS FOR PRODUCING SPHERICAL PARTICLES AND FIBERS WITH A SPECIALLY FIXED SIZE FROM MELTS

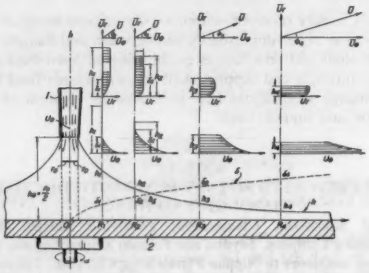
Setsuo Ueda, Chigasaki; Takashi Yasuda, Aichi; Tokuyoshi Yamada, Nagoya, and Shigeki Kobayashi, Tokai, all of Japan, assignors to Itoh Metal Abrasive Co., Ltd., Aichi and Sato Technical Research Laboratory Ltd., Kanagawa, both of, Japan

Division of Ser. No. 69,851, Aug. 27, 1979. This application Mar. 5, 1980, Ser. No. 127,495

Claims priority, application Japan, Aug. 29, 1978, 53-104430

Int. Cl.³ B22F *9/00*

U.S. Cl. 425—8 **7 Claims**



1. An apparatus for producing uniform sized spherical particles or fibers from a melt, comprising a solidification chamber of substantially cylindrical shape with a tundish disposed on a top portion of said chamber for maintaining a fixed head of the melt therein, a conduit fitted in the bottom of said tundish and having an outlet opening, a rotating disk having a flat refractory surface with a diameter between 50 and 200 mm disposed within said chamber at a fixed distance h_o from said outlet opening of said conduit, said conduit for introducing said melt onto said disk, said conduit having an outer opening with a radius r_o of 3 to 30 mm, whereby said distance h_o is maintained within a range of $(r_o/2)$ to $(r_o/2)+2$ mm, a driving apparatus for rotating said disk at a high rotational speed in the range of 3000 to 30,000 rpm, and means having an annular opening for emitting or receiving a gas to or from said chamber at the level of said disk forming gas streams in a direction opposite the direction of linear streams formed on said disk.

4,315,721

FIBROUS WEB STRUCTURE AND ITS MANUFACTURE

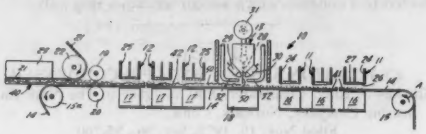
Wayne P. Sorenson, Appleton, Wis., assignor to American Can Company, Greenwich, Conn.

Division of Ser. No. 58,902, Jul. 19, 1979, abandoned. This application Sep. 25, 1980, Ser. No. 190,580

Int. Cl.³ B28B *5/00*

U.S. Cl. 425—81.1 **3 Claims**

1. Apparatus for forming a plural layer fibrous web structure on a linearly movable forming wire, comprising: first and second sets of fiber distributors of the air-lay type disposed above said forming wire; and a melt blowing die positioned intermediate said sets of distributors, said first set of fiber distributors being positioned and operative to lay down on said forming wire a first layer of fibers, said melt blowing die being positioned and operative to lay down on said first layer an intermediate layer of filamentary fibers longer than said fibers of said first layer, and said second set of fiber distributors being positioned and operative to lay down on said intermediate



layer of filamentary fibers a second layer of fibers corresponding to the fibers of said first layer, in formation of said plural layer fibrous web structure.

4,315,722

APPARATUS FOR FORMING A MAT FOR MAKING PARTICLEBOARD

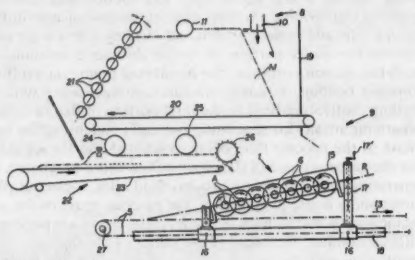
Werner Ufermann, Bernried, Fed. Rep. of Germany, assignor to G. Siempelkamp GmbH & Co., Krefeld, Fed. Rep. of Germany

Filed Nov. 29, 1979, Ser. No. 98,507

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1978, 2851779

Int. Cl.³ B29J *1/00*

U.S. Cl. 425—83.1 **3 Claims**



1. An apparatus for forming a mat of elongated mainly wood particles, said apparatus comprising:

a conveyor having a horizontal and horizontally displaceable transport surface;

a spreading head having an array of parallel interdigitated disks forming longitudinally elongated spaces and rotatable about coplanar axes above said conveyor;

means for continuously displacing said transport surface in a longitudinal transport direction generally perpendicular to said axes, said transport surface having relative to said direction and underneath said array of disks an upstream portion and a downstream portion;

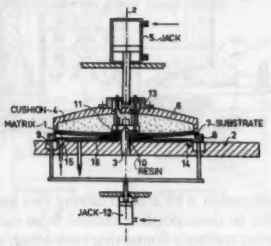
means for feeding elongated mainly wood particles onto said array of disks to orient the particles parallel to said direction while rotating said disks to deposit said particles onto said conveyor as a mat having underneath said array a generally planar upper mat surface forming with said conveyor a deposition angle; and

support means for orienting the plane of said axes at an acute angle to said upper mat surface with said array so much closer to said upper surface at its said upstream portion than at its said downstream portion that particles fall through a relatively short distance and are deposited on said surface of said conveyor generally parallel to said direction underneath said upstream portion and fall through a relatively long distance and are deposited generally randomly underneath said downstream portion.

4,315,723
DEVICE FOR MOLDING INFORMATION-CARRYING DISKS

Robert Antoine; Claude Bricot, and Gerard Robin, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Sep. 4, 1980, Ser. No. 184,167
Claims priority, application France, Sep. 6, 1979, 79 22300
Int. Cl.[3] B29C *27/00;* B24D *17/00*
U.S. Cl. 425—110 13 Claims



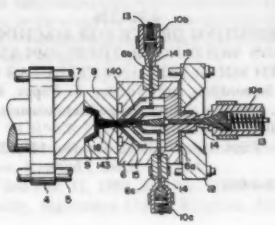
1. A device for molding disks carrying information in the form of surface microreliefs and formed from a substrate disk and a layer of resin carrying the microreliefs, making use of the spreading out of a fillet of fluid resin between an etched matrix disk and the substrate disk, comprising means for depositing this resin fillet in the center of one of the disks, spreading means for applying the flexible second disk against the resin, this second disk being first of all curved then progressively flattened against the first one while pushing back the resin towards the periphery, and means for hardening the resin layer thus formed between the two disks, comprising furthermore support means in the form of a ring having a diameter greater than that of the first disk, the second disk having a diameter at least equal to that of the ring, these means being movable in the direction Z perpendicular to the plane of the first disk, so as to form a support for the periphery of the second disk and to give it its curved shape then to back away progressively as the second disk is applied against the first one, and finally to allow separation of the disks after hardening of the resin; the spreading means comprising a deformable resilient cushion having a bearing face with a convex shape in the absence of compression, situated on the side opposite the first disk with respect to the second and movable in direction Z so as to exert a progressive thrust on the second disk, beginning in the zone of the resin fillet then extending towards the periphery as the support means back away, this cushion being solid with a central annulus having a diameter less than that of the ring of resin exerting a nipping effect at the center of the disk and cooperating with the support means so as to ensure the relative positioning of the two disks during the whole of the spreading phase.

4,315,724
PROCESS AND MACHINE FOR MULTI-COLOR INJECTION MOLDING

Fumio Taoka; Norimichi Tanno, and Hideo Watanabe, all of Tokyo, Japan, assignors to Kamaya Kagaku Kogyo Co., Ltd., Tokyo, Japan

Division of Ser. No. 105,263, Dec. 19, 1979. This application Aug. 4, 1980, Ser. No. 175,330
Int. Cl.[3] B27F *1/10*
U.S. Cl. 425—130 8 Claims

1. A multi-color injection molding machine comprising:
at least three injection units for injecting three different molten resins;
a molten resin mixing manifold around which said at least three injection units are disposed, said molten resin mixing manifold having resin passages communicated through the medium of check valves with respective nozzles of respective injection units, and a temperature at said molten resin mixing manifold being controllable;
an arranging chamber removably built in said molten resin mixing manifold and having a gathered resin channel at which said respective resin passages join each other;
a stationary mold attached to said molten resin mixing manifold and having resin passages communicated with said gathered resin channel of said arranging chamber;

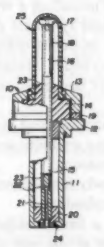


a movable mold adapted to reciprocate in an opposed relation to said stationary mold and having a cavity adapted to communicate with the resin passages in said arranging chamber when mated with said stationary mold; and
an injection control means for controlling the sequences of injection of molten resins from said at least three injection units individually and independently but under precise correlative control.

4,315,725
JIG FOR ORIENTATION-BLOW MOLDING PIECE

Yataro Yoshino, Tokyo, Japan, assignor to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Filed Jun. 17, 1980, Ser. No. 160,382
Claims priority, application Japan, Jul. 10, 1979, 54-87318
Int. Cl.[3] B29C *17/07;* F29B *9/06*
U.S. Cl. 425—174.4 5 Claims



1. A device for heating an injection molded resin piece having a neck, prior to biaxial orientation blow molding, comprising:
a rotary turntable;
a cover disposed above and spaced from said turntable;
a jig disposed at the periphery of said turntable, comprising:
a neck support for holding the piece in neck portion downward position;
a mandrel disposed beneath said neck support;
an elevationally reciprocally movable core shaft inserted in said mandrel and extending through said neck support for longitudinally orienting the piece, having a blow-molding air-passage;
a heat-insulating layer coated on the outer periphery of said core shaft;
a plurality of infrared or far infrared ray heating elements disposed inside said cover in the vicinity of the periphery of the turntable, said insulating layer comprising

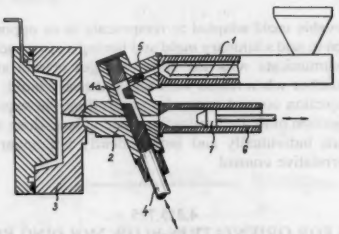
material which will cause heating of the interior of the piece held by said jig due to heating of said insulating layer by special wavelength rays of said heating elements upon irradiation of said heating elements.

4,315,726

DISTRIBUTING DEVICE FOR MACHINES FOR INJECTION MOLDING OF THERMOPLASTIC PARTS WITH SOLID SKIN AND CELLULAR CORE

Stefan G. Semerdjiev, and Nikolay T. Popov, both of Sofia, Bulgaria, assignors to Institute po Metaloznanie i Technologia na Metalite, Sofia, Bulgaria

Filed Apr. 30, 1980, Ser. No. 145,233
Int. Cl.³ B29D *27/00*
U.S. Cl. 425—560 **1 Claim**



1. An injection molding apparatus for the production of thermoplastic bodies having a continuous skin and a cellular core, said apparatus comprising:

a mold having the shape of a body to be produced and provided with a mold cavity formed with an inlet for foamable synthetic resin material;

a plasticating unit including a worm and worm cylinder for preparation of said synthetic resin material, said plasticating unit having an outlet spaced from said mold;

an accumulating cylinder laterally spaced from and parallel to the cylinder of said plasticating unit and provided with a piston; and

a distributing device disposed between said plasticating unit, said accumulating cylinder and said mold, said distributing device comprising:

a distributing body formed with a channel inclined to the axes of said cylinders,

means forming a first passage communicating with said inlet and open at one side of said channel,

means forming a second passage communicating with said outlet of said plasticating unit and opening at a side of said channel opposite said one side,

a third passage communicating with said accumulating cylinder and opening at said opposite side of said channel,

a two-position slider shiftable in said channel and formed with a generally U-shaped passage having respective arms communicating with said second and third passages in one position of said slider in which said slider blocks said first passage, said U-shaped passage having a bight region communicating with said first passage when one of said arms communicates with said third passage in a second position of said slider blocking said second passage, and

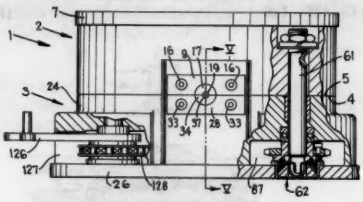
a check valve in said second passage blocking flow of synthetic resin material through said second passage toward said plasticating unit.

4,315,727

ROTARY BALL LOCK

John W. Black, Hickory Corners, Mich., assignor to Pemco-Kalamazoo, Inc., Kalamazoo, Mich.

Filed Nov. 14, 1980, Ser. No. 206,806
Int. Cl.³ B29F *1/03*
U.S. Cl. 425—563 **9 Claims**



1. In combination with a mold having two mold parts movable between an open position remote from each other and a closed position sealingly contacting each other, a mold locking mechanism for securely clamping said parts together in said closed position comprising:

a cylindrical tie rod extending between said mold parts and supported on one said mold part by first mounting means, the radially outer surface of said rod having at least one longitudinally extending guide groove and having at least one lock groove intersecting each guide groove at substantially a right angle, said rod having a ramp surface in said grooves at each said intersection thereof and a first bearing surface in each said lock groove adjacent each said ramp surface;

a lock element supported on said other mold part by second mounting means and having a cylindrical opening therein coaxially aligned with and of slightly larger diameter than said tie rod, the surface of said opening having at least one substantially hemispherical projection extending radially inwardly and having thereon a second bearing surface; and

drive means for effecting relative rotation between said tie rod and lock element about the common axis of said rod and said opening;

whereby as said mold parts move to said closed position, said tie rod is axially slidably received in said lock element opening, each said hemispherical projection is slidably received within a said guide groove and is positioned at a said intersection of said guide and lock grooves when said mold parts reach said closed position, and said relative rotation of said tie rod and lock element by said drive means causes said second bearing surfaces on said projections to contact and be guided by said ramp surfaces onto said first bearing surfaces in said lock grooves, thereby effecting said secure clamping together of said mold parts in said closed position.

4,315,728

ADJUSTABLE SLIDE SHOE FOR DIE CARRIER PLATE OF INJECTION MOLDING MACHINE

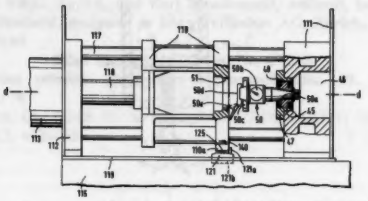
Karl Hehl, Arthur-Hehl-Strasse 32, 7298 Lossburg 1, Fed. Rep. of Germany

Filed Oct. 27, 1980, Ser. No. 201,344
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1979, 2943118; Feb. 20, 1980, 3006230; Aug. 5, 1980, 3029597
Int. Cl.³ B29F *1/00*
U.S. Cl. 425—589 **12 Claims**

1. In an injection molding machine in which a machine base has mounted on it a die closing unit with a substantially horizontally oriented movement axis and, as part thereof, carries a stationary die carrier member to which is attached a stationary portion of an injection molding die, a movable die carrier member carrying a movable portion of said die, and a set of

spaced tie rods which extend parallel to said movement axis, reaching axially through the movable die carrier member so as to position and guide the latter, the combination therewith of an adjustable supporting arrangement for the movable die carrier member comprising in combination:

two fixed guide rails which are arranged on the machine base in parallel alignment with the tie rods of the die closing unit, below and on opposite sides of the movement axis of the latter, the guide rails having substantially horizontal guide tracks on their upper sides and substantially vertical guide tracks on their inner sides;



two slide shoes which are attached to the movable die carrier member in such a way that they engage the guide rails, each slide shoe having vertical and horizontal guide faces in contact with the corresponding guide tracks of the rails;

means for adjustably clamping the slide shoes to the movable die carrier member; and

means for threadingly lowering each slide shoe in relation to the movable die carrier member, so as to make it possible to transfer from the tie rods to the horizontal guide tracks of the guide rails at least a substantial portion of the weight of the movable die carrier member and attached die portion.

4,315,729

GAS BURNER

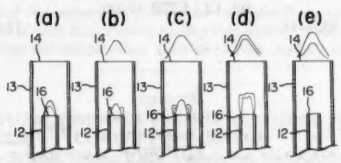
Eiichi Tanaka, Yamatokoriyama, and Noboru Ishibashi, Nabari, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 26, 1979, Ser. No. 15,150

Claims priority, application Japan, Mar. 2, 1978, 53-24287; Mar. 2, 1978, 53-24288; Mar. 2, 1978, 53-24289; Mar. 2, 1978, 53-24291; Aug. 24, 1978, 53-103716

Int. Cl.³ F23N *5/00*

U.S. Cl. 431—75 **10 Claims**



1. An improved pilot gas burner of the Smithell type, comprising:

an inner tube having an inlet end for receiving a mixture of combustible gas and primary air, and an open end comprising a primary flame cone mouth having a predetermined cross-sectional area;

an outer tube surrounding and coaxial with said inner tube adjacent and extending beyond said primary flame cone mouth thereof, said outer tube having (i) an auxiliary air inlet port in the wall thereof at a position between said inlet end and primary flame cone mouth of said inner tube, and (ii) an open end adjacent said primary flame cone mouth comprising a secondary flame cone mouth having a given cross-sectional area;

the ratio between said given area of said secondary flame cone mouth and said predetermined area of said primary flame cone mouth being in the range of 2.12 to 25; and

means for controlling the flow rates of said combustible gas, primary air and secondary air so that (i) primary and secondary flame cones may be sustained at said primary and secondary flame cone mouths respectively, (ii) the equivalent ratio respecting said combustible gas and primary air is in the range of 1.1 to 2.0, and (iii) the gradient of boundary velocity gradient of said combustible gas is in the range of 700 to 4,000 sec.$^{-1}$

4,315,730

BURNER CONTROL SYSTEM

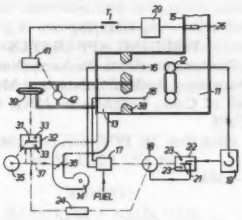
Kenneth Watson, Croydon, England, assignor to Telegan Limited, Croydon, England

Filed Feb. 11, 1980, Ser. No. 120,130

Claims priority, application United Kingdom, Feb. 9, 1979, 4595/79

Int. Cl.³ F23H *5/00*

U.S. Cl. 431—76 **5 Claims**



1. A control system for a burner having: separate controls for the fuel supply and for the supply of combustion air, means for controlling the separate controls in response respectively to a demand or output signal and to an air supply signal, means interconnecting the separate controls, and means responsive to excessive oxygen in the exhaust gasses for distorting the air supply signal, the control system further including a burner register and pressure lines wherein said pressure lines extend from either side of the register for providing the air supply signal, the system further including a motor driven valve, said motor driven valve interconnecting the pressure lines; and means for driving the valve motor in dependence on the oxygen level in the exhaust gas.

4,315,731

ELONGATED IGNITING DEVICE

Robert W. Moore, 449 E. Altgeld Ave., Glendale Heights, Ill. 60137

Filed Mar. 10, 1981, Ser. No. 242,362

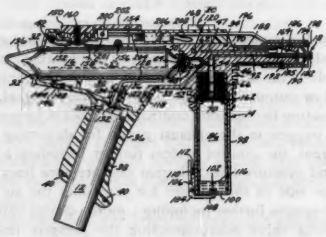
Int. Cl.³ F23Q *1/04*

U.S. Cl. 431—254 **12 Claims**

1. An elongated igniting device for a conventional cigarette lighter having a head end with a rotatable flint wheel adjacent a movable valve actuator controlling flow of fuel through a valve to an outlet port, said device comprising:

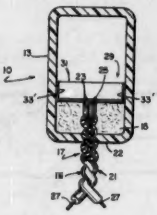
an elongated shank;
a handgrip on one end portion of said shank;
holding means on the opposite end portion of said shank for releasably retaining the cigarette lighter with the head end facing away from the hand grip;
an actuator rod guided for reciprocable movement parallel to said shank, said rod having an outer extension beyond the head end of the lighter and being movable between extended and retracted mode conditions relative to the lighter head end;
spring means biasing said actuator rod toward its said extended mode condition;
trigger means adjacent the hand grip and connected to the actuator rod, effective in response to pull on the trigger, to move said actuator rod to said retracted mode condition against the bias of said spring; and
igniting means supported on said outer extension in position to engage and rotate the rim of said flint wheel and depress said valve actuator to ignite the lighter in response to movement of the actuator rod to its said retracted mode condition.

4,315,732
WELDING APPARATUS
Francis W. Rowbottam, Santa Barbara; Nathan L. Skinner; John O. Niswonger, both of Goleta, and Milt Wadler, Santa Barbara, all of Calif., assignors to JJNR Corporation, Los Angeles, Calif.
Filed Dec. 26, 1979, Ser. No. 106,395
Int. Cl.³ F23D *13/04*
U.S. Cl. 431—344 **21 Claims**



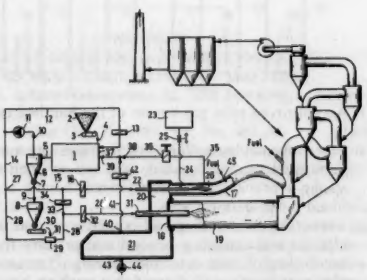
1. In welding apparatus including a fuel container for liquefied gas, oxygen generating means, a burner nozzle, and flow control means for conveying a controlled amount of gas and oxygen from said container and said oxygen generating means to said burner nozzle for combustion, an improved oxygen generating means comprising:
a reactor containing catalyst means for decomposing an oxygen generating compound to produce oxygen and water and concurrently release heat;
supply means for supplying a controlled volume of an aqueous solution of said oxygen generating compound to said reactor for contacting said catalyst means;
condenser means coupled to said reactor to receive and cool the oxygen and water heated by the catalytic decomposition of said oxygen generating compound, and including a collection chamber for receiving the cooled oxygen and water; and
evaporator means for conveying oxygen and any entrained water from said collection chamber to said flow control means, said evaporation means being in thermal association with said reactor for heating and vaporizing said entrained water in the oxygen.

4,315,733
PHOTOFLASH LAMP WITH LOOSE POWDER COMPOSITION AND METHOD OF MAKING
Andre C. Bouchard, Peabody, and George J. English, Reading, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.
Filed Nov. 21, 1979, Ser. No. 96,605
Int. Cl.³ F21K *5/02*
U.S. Cl. 431—362 **15 Claims**



1. A miniature photoflash lamp comprising:
a light-transmitting envelope;
a flash-producing composition in loose powder form positioned at a predetermined location within said envelope in contact with the internal walls thereof for providing a substantially localized, highly intense flash of light upon ignition thereof, said flash-producing composition including a quantity of powdered oxidizer;
ignition means secured within a wall or end portion of said envelope for igniting said flash-producing composition; and
means for retaining said flash-producing composition at said predetermined location within said envelope, said means located within said envelope and frictionally engaging the internal walls of said envelope with only the frictional force necessary to retain said composition at said location prior to ignition thereof and for being removed from said location during ignition of said composition.

4,315,734
METHOD AND APPARATUS FOR DRYING AND PULVERIZING COAL
Hubert Ramesohl, Bergisch Gladbach, and Horst Herchenbach, Troisdorf, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany
Filed Jul. 31, 1980, Ser. No. 174,131
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1979, 2931214
Int. Cl.³ E27B *15/00*
U.S. Cl. 432—14 **13 Claims**



1. In a method for drying and pulverizing coal for use in a cement making process including a pre-heating step, a calcin-

ing step, a sintering step in a rotary kiln, and a cooling step, wherein air heated in said cooling step is returned into said calcining step through a tertiary air conduit, the improvement which comprises:

grinding the coal, and

directing at least a part of the dust-laden air from said grinding into said tertiary air conduit.

4,315,735

PROCESS FOR CALCINING MINERAL RAW MATERIALS IN A UNIFLOW REGENERATIVE SHAFT FURNACE

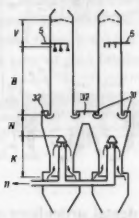
Erwin Füssl, Zurich, and Karl Scheibenreif, Adliswil, both of Switzerland, assignors to Maerz Ofenbau AG, Zurich, Switzerland

Filed Oct. 22, 1979, Ser. No. 87,308

Claims priority, application Switzerland, Dec. 29, 1978, 13294/78

Int. Cl.³ C22B *26/20;* **F27D** *3/22, 23/00;* **C01F** *11/06*

U.S. Cl. 432—25 **6 Claims**



1. In a process for calcining raw materials, such as limestone, dolomite or magnesite, in a uniflow regenerative shaft furnace having at least two shafts alternately operated one as a calcining shaft and the other as a counterflow shaft, said shafts extending in a generally juxtaposed vertical orientation each defining a bottom with a cooling zone proximate said bottom wherein simultaneous cooling of calcined lime with cooling air is effected in said cooling zones of said shafts, said furnace including transfer duct means located above said cooling zones connecting said shafts in flow communication with each other, the improvement comprising that cooling air is introduced simultaneously at the bottom of both said shafts into said cooling zone, that heated cooling air is removed at the upper termination of said cooling zones from both shafts, that flue gases are conveyed from the one of said shafts operating as a calcining shaft to the other of said shafts operating as a counterflow shaft through said transfer duct means, and that the composition of the flue gases conveyed through said transfer duct means and the amount of cooling air removed from said cooling zones is such that a net reducing atmosphere is maintained throughout the counterflow shaft above the cooling zone.

4,315,736

PIVOTAL SWING-OUT FUSER ASSEMBLY FOR COPYING APPARATUS

Günther Schnall, Eching; Klaus Aldenhoven, Unterpfaffenhofen, and Hanns Blöchl, Unterhaching, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

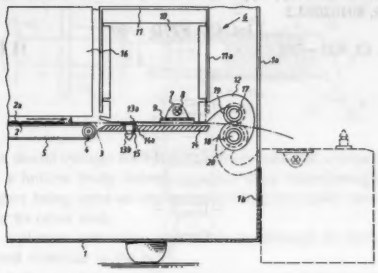
Filed Oct. 25, 1977, Ser. No. 845,453

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1976, 2649018

Int. Cl.³ H05B *1/00;* **F27B** *9/28*

U.S. Cl. 432—59 **1 Claim**

1. In a copying apparatus having a housing and wherein a copy sheet bearing a toner image moves in a path past a heater of a fuser assembly to fix said image, the improvement comprising pivot means defining on said housing a spatially fixed pivot axis; and means between said pivot means and said fuser assembly for pivoting of the latter about said spatially fixed pivot axis between an operative position in which the fuser assembly is located inside the housing and said heater is juxtaposed with said path, and a servicing position in which the fuser assembly is located outside the housing and said heater is remote from said path and positioned for servicing, wherein



said means for pivoting includes at least one arm connected between said fuser assembly and said pivot, said apparatus further comprising at least one transport roller for said sheet downstream on said path from said fuser assembly in said operative position thereof, said roller being rotatable about said pivot axis and constituting said pivot.

4,315,737

BASE FOR A KILN CAR

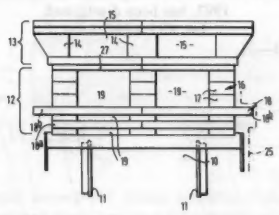
John Elliott; Malcolm G. Bell, and William J. Lovatt, all of Stoke on Trent, England, assignors to Acme Marls Limited, Hanley, England

Filed Aug. 8, 1980, Ser. No. 176,295

Claims priority, application United Kingdom, Aug. 14, 1979, 28274/79

Int. Cl.³ F27D *3/12, 5/00*

U.S. Cl. 432—241 **11 Claims**



1. A kiln car base adapted to be directly mounted on a wheeled metal trolley, comprising a plurality of load bearing, thermally insulating upright pillars, each pillar comprising a plurality of vertically stacked pillar elements of load bearing, thermally insulating ceramic material, each pillar having one or more vertically extending locating means; a plurality of ceramic baffle walls engaging and retained in upright positions by said locating means between at least the peripherally disposed ones of said pillars to define one or more central compartments; one or more horizontally disposed ceramic bats disposed between pillar elements of said pillars and having portions thereof extending peripherally outwardly of said pillars to provide a heat seal, and a low thermal mass insulating material in the or each central compartment.

4,315,738

SUPPORT ELEMENT, UPRIGHT SUPPORT AND SUPPORT STRUCTURE FOR SUPPORTING ARTICLES DURING KILN FIRING

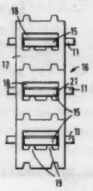
William J. Lovatt, Stoke on Trent, England, assignor to Acme Marls Limited, England

Filed Apr. 21, 1980, Ser. No. 142,245

Claims priority, application European Pat. Off., Apr. 14, 1980, 80102003.3

Int. Cl.³ F27D 5/00

U.S. Cl. 432—258 11 Claims



1. A support element for a support structure including refractory cranks or shelves for supporting articles during kiln firing, the element being capable of being stacked generally vertically with other elements to form an upright support and having a transverse aperture which

extends completely therethrough to receive a portion of a crank or shelf,

extends generally horizontally when the element is in use,

has dimensions greater than the portion to be supported therein, and

is partially defined by a lower border which defines a plurality of small, localized contact points located so that when such a portion is positioned to extend loosely through the aperture, the portion is supported on the contact points so that kiln gases can flow through the aperture and around the portion.

4,315,739

SPRING TENSIONING DEVICE AND METHOD

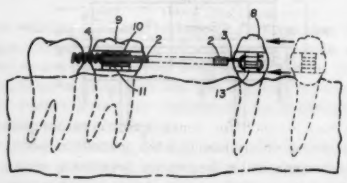
Steve B. Cain, 11006 N.W. 58, Kansas City, Mo. 64152

Continuation-in-part of Ser. No. 796,987, May 16, 1977, Pat. No. 4,199,865. This application Dec. 19, 1979, Ser. No. 105,286

The portion of the term of this patent subsequent to Apr. 29, 1997, has been disclaimed.

Int. Cl.³ A61C 3/00

U.S. Cl. 433—21 18 Claims



1. A unitary tension producing article of manufacture for exerting a tension force between two objects, one of said objects being provided with a stop for said article, said article comprising:

tension spring means;

means for coupling one end of said spring means with one of said objects;

anchor means comprising an integral extension of said spring means and extending in at least partially overlying relationship to said tension spring means,

said anchor means being biased against said stop by said spring means and characterized by being resiliently yieldable under the influence of said spring means while holding the other end of said spring means and deformable when the force exerted by said spring means exceeds a predetermined value thereby causing said anchor means to move past said stop and release said spring means from said other object.

4,315,740

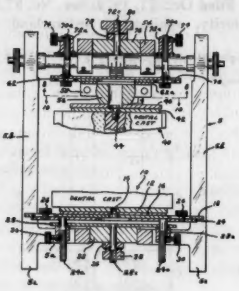
APPARATUS FOR MOUNTING DENTAL CASTS

Roger W. Mercer, 1340 Arlington Dr., Fairborn, Ohio 45324, and Louis E. Hay, 847 Woodhill Rd., Dayton, Ohio 45431

Filed Apr. 18, 1977, Ser. No. 788,236

Int. Cl.³ A61C 11/00

U.S. Cl. 433—63 1 Claim



1. In combination, a dental articulator mounting matched upper and lower dental casts having a threaded aperture in the base of each of said dental casts, said combination comprising:

(a) an articulator body having a base element, at least one vertical element extending upward from said base element, and a normally horizontal leaf element pivotally supported at the upper end of said vertical element to be superimposed with said base element;

(b) a first mounting jig supported by the base element of said articulator body, said first mounting jig having an upward extending screw member;

(c) a lower dental cast having a threaded aperture in the base of said lower dental cast, the screw member of said first mounting jig engaging the threaded aperture in the base and mounting said lower dental cast onto the base element of said articulator body;

(d) an upper dental cast having a threaded aperture in the base of said upper dental cast; and,

(e) a second mounting jig supported by the leaf element of said articulator body, said second mounting jig having a vertically adjustable screw member extending downward and engaging the threaded aperture in said upper dental cast and mounting said upper dental cast onto said second mounting jig.

4,315,741

HAND-OPERATED INSTRUMENT FOR DENTAL CARE OR TOOTH TREATMENT

Ernst Reichl, Munich, Fed. Rep. of Germany, assignor to Bosch-Siemens Hausgeräte GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 11, 1980, Ser. No. 111,327

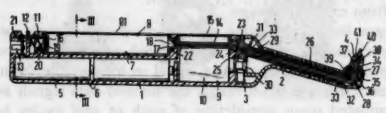
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1979, 2901136

Int. Cl.³ A61C 3/06

U.S. Cl. 433—82 5 Claims

1. Hand-operated instrument for dental care or tooth treatment having an electric drive, comprising a hand-grip portion, a slender instrument neck portion having one end integral with said hand-grip portion and a free end, a drive motor of the

electric drive and a fluid reservoir disposed in said hand-grip portion, a working implement integral with said free end of said neck portion, means including a fluid duct at least partially disposed in said neck portion for supplying fluid from said reservoir to said working implement, means including drive elements at least partially disposed in said neck portion and being driven by said drive motor for driving said working implement, said drive elements including a tubular drive shaft,



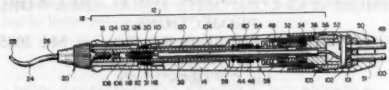
and said fluid duct being disposed in said tubular drive shaft, an implement coupling for coupling said working implement to said free end of said neck portion, and a miter gear formed of two gears connecting said implement coupling to said drive shaft, said fluid duct being tubular in shape and said drive shaft being rotatably supported on said fluid duct, and said fluid duct having a bend formed therein which forms a bearing for both gears of said miter gear at said implement coupling.

4,315,742

VIBRATORY DEVICE HAVING TOOL ASSEMBLY WITH FLUID TRANSPORT MEANS

John E. Nash, Downingtown, and Arthur A. Knopp, Chalfont, both of Pa., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Nov. 5, 1979, Ser. No. 91,012
Int. Cl.³ A61C *1/10, 1/12, 1/07, 17/02*
U.S. Cl. 433—86 **22 Claims**



1. A work tool assembly for a vibratory device comprising:

a hollow body having a first end and a second end, said first end being adapted for detachable connection to a vibratory device and having a first orifice therein, said second end of said body having a second orifice therein;

a tube having a first end and a second end, said tube extending continuously from said first end of said body to said second end of said body, said second end of said tube terminating substantially adjacent to the second end of said body, said first end of said tube being located within said first orifice and terminating flush with said first end of said body; and

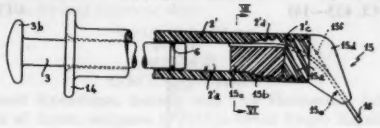
a work tool having a first end and a second end, said first end of said tool being adapted for insertion into said second end of said body within said second orifice, said tool having a groove on the outer surface thereof extending from said first end of said tool to a position intermediate said first and second ends of said tool and outwardly of said second end of said body, a portion of said tube lying within said groove between said tool and said body, thereby establishing a continuous fluid path from said first end of said body to said second end of said body to convey fluid into said groove and in contact with the outer surface of said tool whereby the fluid is transferred along the outer surface of said tool to said second end of said tool.

4,315,743

SYRINGES FOR INJECTING PASTY PRODUCTS

Jean-Louis Brugirard, Le Clos - Saint Maurice sur Dargoire, 69440 Mornant, France

Filed Mar. 24, 1980, Ser. No. 132,753
Int. Cl.³ A61C *5/04*
U.S. Cl. 433—90 **6 Claims**



1. A dental syringe for ejecting a pasty material, comprising:

(a) a hollow body having an axial bore therethrough the bore being open at one end and being internally threaded at its other end;

(b) a plunger extending into the body through its open end and slideable in the bore;

(c) a stopper having a threaded part cooperatively receivable in the threaded end of the bore, the stopper having a head extending therefrom and the head having a channel extending through it at an oblique angle to the axis of the bore and the channel communicating with the bore in the body;

(d) a flexible tube removably inserted in the channel and sealed thereto, the tube having a portion extending from the channel beyond the head; and

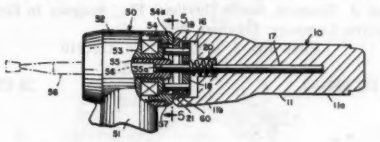
(e) said stopper further comprising a longitudinal notch extending along the side of the threaded part of the stopper parallel to the axis of the bore and extending into said oblique channel and shaped to receive said flexible tube, the notch distorting the tube against the bore and wedging it in place when the stopper is screwed into the bore.

4,315,744

CHUCK WRENCH FOR DENTAL HANDPIECES

Thomas W. Albert, 131 E. McClelland, Bartlett, Ill. 60103

Filed Jan. 3, 1980, Ser. No. 109,395
Int. Cl.³ A61C *7/08*
U.S. Cl. 433—126 **19 Claims**



1. A chuck wrench for dental handpieces comprising an elongated wrench body having a longitudinal axis of rotation and being dimensioned to be gripped between a user's fingers for one-handed rotation; a rigid shaft of non-circular cross section secured to said body and extending from one end thereof along said axis of rotation; at least one lug pin disposed alongside said shaft in spaced parallel relation therewith; means supporting said pin with respect to said body for rotational movement between retracted and extended positions; stop means provided by said body for limiting movement of said pin in said extended position; and spring means urging said pin into said extended position and frictionally engaging both said pin-supporting means and said body to provide limited frictional clutching resistance to independent relative rotation of said pin-supporting means and said body about said axis; said shaft extending a substantial distance beyond said pin when said pin is in its extended position.

4,315,745
DENTAL ELEVATOR

Seitaro Murata, 32-4, Matsuyama 1-chome, Naha-shi, Okinawa-ken, Japan

Filed Nov. 17, 1980, Ser. No. 207,573
Claims priority, application Japan, Nov. 20, 1979, 54-161477[U]
Int. Cl.[3] A61C 3/00
U.S. Cl. 433—141 4 Claims

1. Dental elevator comprising a holder portion, a stem portion and a beak portion,

the improvement is characterized in that

(i) said holder portion, said stem portion and said beak portion being constructed as a substantially straight and integral elongated bar,

(ii) said beak portion having one longitudinal side flattened like a chisel surface and the other longitudinal side rounded, said flattened side extending to the terminating end of said beak portion,

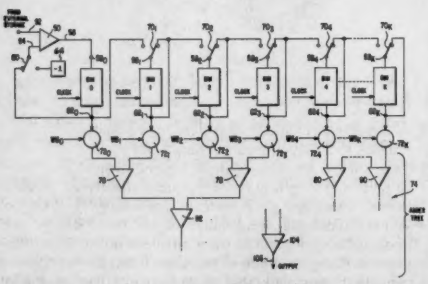
(iii) said beak portion having a thickness and a width narrowed gradually toward said terminating end of said beak portion, and

(iv) said beak portion being with a V-shaped notch opening onto said terminating end with the apex of the V being spaced from said terminating end and the legs of the V ending at said terminating end, whereby said notch is engageable with the root of a tooth being extracted to prevent slipping of the dental elevator on said root during extraction.

4,315,746
HORIZONTAL BEAM WIDTH INTEGRATOR

Arthur J. Heidrich, South Daytona, Fla., assignor to General Electric Company, Syracuse, N.Y.

Filed Jun. 2, 1980, Ser. No. 155,310
Int. Cl.[3] G09B 9/00
U.S. Cl. 434—2 26 Claims



1. Apparatus for integrating externally stored data signals adapted to simulate echoes produced by successive radial sweeps of a radar beam while traversing a predetermined azimuth angle, respective portions of the total area illuminated by said beam during each sweep providing contributions to the echo from said area, each of said echo contributions varying for successive sweeps as a function respectively of the beam gain profile and of the beam position relative to the corresponding area portion, respective ones of said echo contributions being simulated as a plurality of said data signals in digital, logarithmic form each representative of the echo intensity at a discrete beam range of the corresponding illuminated area portion;

said apparatus comprising:

means for successively receiving said simulated data signals from external storage;

means for accumulating said received data signals during periodically repeating cycles, said accumulating means providing a lumped data signal in logarithmic form for each discrete beam range, the lumped data signals accumulated upon completion of each of said cycles being jointly representative of a group of lumped echo contributions, the number of echo contributions in said group being determined substantially by the duration of each cycle as a selected multiple of the sweep period;

a plurality of storage bins jointly capable of storing the data signals of a complete echc,

means for loading successive ones of said groups of lumped echo contributions into separate ones of said bins during successive cycles;

means for applying a weighting factor to said groups of lumped echo contributions in said bins to correct for variations due to said beam gain profile, each of said last-recited means including separate means connected to each bin for numerically adding a separate, externally derived, average weighting signal to each of the lumped data signals received from the connected bin; and

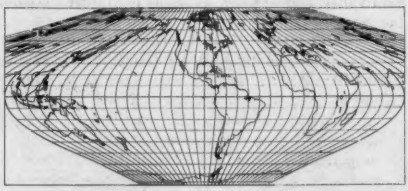
means for combining the gain profile-corrected groups of lumped echo contributions by successive pairing;

whereby digital output signals in logarithmic form are provided at the output of said combining means which simulate the echo produced by each sweep of said beam.

4,315,747
HOMOLINEAR COMPOSITE EQUAL-AREA WORLD PROJECTIONS

F. Webster McBryde, 10100 Falls Rd., Potomac, Md. 20854

Filed Jun. 29, 1977, Ser. No. 811,318
Int. Cl.[3] G09B 29/00
U.S. Cl. 434—150 2 Claims



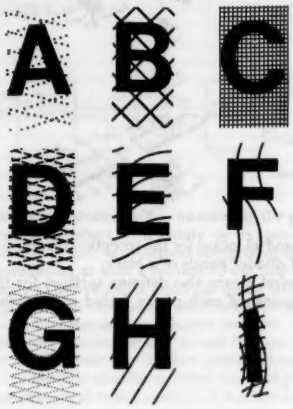
1. An equal-area homolinear composite world map having parallels of latitude parallel to the equator and comprising an equatorial map section and polar map sections, said equatorial map section being the equatorial portion of a fusiform equal-area world map, having a graticule prepared according to first mapping equations, said polar map sections being the polar map sections of a flat-polar area world map having a graticule prepared according to second mapping equations, said equatorial section and said polar sections being joined along parallels which, using the same linear mapping scale, are of equal length, and said second mapping equations being derived solely by modifying said first mapping equations of said fusiform map so that the poles of the graticule of said flat-polar map are linear rather than pointed.

4,315,748

ALPHABETIC DEVICE

Jorge Frascara; Walter Jungkind; Carol J. Ladan, and Thomas M. Nelson, all of Edmonton, Canada, assignors to The Governors of the University of Alberta, Canada

Filed Mar. 22, 1979, Ser. No. 22,806
Int. Cl.[3] G09B *1/40, 1/34*
U.S. Cl. 434—159 1 Claim



1. An alphabetic device to be used in an initial reading process comprising:

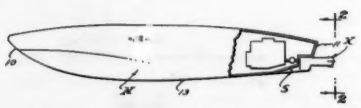
a substrate comprising at least one of paper, metal, plastic, and wood having reproduced on it a plurality of letters of a traditional written language, each letter being reproduced within the confines of a zone, said zone being reproduced on said substrate and being made up of components selected from dots, dashes, and lines arranged in regular arrays, and each zone being distinct from each other zone and unique to the letter confined therein, whereby the zone provides an additional visual discrimination cue to aid in letter recognition.

4,315,749

NON JAMMING REVERSIBLE JET NOZZLE

Kenneth R. Baker, Woodland Hills, and Robert T. DeVault, Simi Valley, both of Calif., assignors to Maritec Corporation, Los Angeles, Calif.

Filed Aug. 27, 1979, Ser. No. 69,740
Int. Cl.[3] B63H *11/00*
U.S. Cl. 440—42 10 Claims



1. A reversible hydrojet drive unit for boat propulsion and including,

a water pump housing terminating in a horizontal rearwardly opening exit flow passage having top and bottom and side walls parallel to a propulsion axis,

a prime mover driven impeller operable in said housing to deliver propulsion water rearwardly from said exit flow passage,

a steering nozzle embracing the exit flow passage and with top and side walls forming continuations of said top and side walls of said exit flow passage and having a depending forwardly recurved skirt and rotatable on a vertically disposed axis upon trunions projecting from the said pump housing immediate to the rearwardly opening exit flow passage thereof,

the said steering nozzle having a central vertically disposed rudder vane depending from the top wall thereof and with its leading edge coincidental with the said vertically disposed axis to steer and to reduce turbulence,

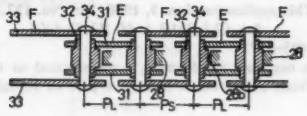
and a reverse gate having a shiftable door to open and to close the nozzle for forward redirection of propulsion water by said recurved skirt.

4,315,750

SPROCKET CHAIN

Yoshinori Kawashima, Sakado, and Yuji Hashimoto, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 29, 1980, Ser. No. 116,455
Claims priority, application Japan, Feb. 7, 1979, 54-13021
Int. Cl.[3] F16H *7/06, 55/30*
U.S. Cl. 474—153 7 Claims



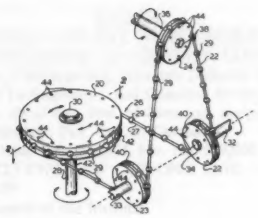
1. In combination: a sprocket having equally spaced teeth, a chain for cooperation with the sprocket, having a series of alternating pairs of inner links and outer links, each inner link being longer than the tooth pitch of the sprocket, each outer link being shorter than said tooth pitch by the same amount, and each pair of links being adapted to receive a sprocket tooth between them.

4,315,751

POSITIVE DRIVE SYSTEM

Rene A. Conrad, 215 Olive Hill La., Woodside, Calif. 94062

Continuation-in-part of Ser. No. 845,929, Oct. 27, 1977, Pat. No. 4,214,488. This application Nov. 26, 1979, Ser. No. 97,132
Int. Cl.[3] F16G *1/28*
U.S. Cl. 474—154 11 Claims



1. A positive circular drive system for rotatably coupling a drive means to a driven means, comprising:

a drive sheave having a groove formed around its curved surface and a plurality of cylindricallyshaped pockets formed along said groove means, the axes of symmetry of said pockets lying along radials of said drive sheave, said pockets being separated from adjacent pockets by a distance defining the pitch of the sheave and having a depth beneath the bottom of said groove greater than one-half of the cylindrical diameter thereof;

means for driving said first sheave;

a first drive cable disposed to engage said sheave and including,

a single length of flexible multistrand cable, said cable being coined so as to have a substantially smooth outer

surface with an outside diameter less than the width of said groove;

a plurality of nodules each consisting of a mass of material formed into a regular, geometric spherical solid having a diameter slightly less than the diameter

of said pockets, said nodules being attached to said cable in regular, spaced apart disposition, the distance between adjacent nodules being substantially equal to the pitch of said sheaves, such that at any point in time a plurality of adjacent nodules engage a corresponding plurality of adjacent pockets on said sheave; and

means linking said drive cable to said driven means, whereby motion of said drive sheave is transferred to said driven means by said drive cable.

4,315,752

MANUFACTURE OF H-DIVIDERS

Lenard E. Moen, 7914 Michigan Ave., Whittier, Calif. 90602

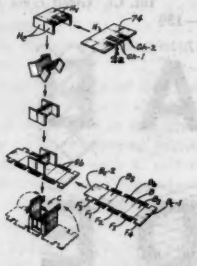
Division of Ser. No. 910,198, May 30, 1978, Pat. No. 4,220,076. This application Jun. 9, 1980, Ser. No. 157,325

Int. Cl.[3] **B31B** *1/44;* **B31D** *3/04*

U.S. Cl. 493—171 **15 Claims**

1. In a machine for forming a paperboard or the like H-divider from a flat blank having a pair of foldable divider panels, each of which is joined at its opposite ends to a pair of foldable end panels, the improvement comprising:

stationary split mandrel means defining a rectangular prismatic structure with an unobstructed entry into a gap of



said mandrel means for the reception thereinto of a folded pair of divider panels of a blank,

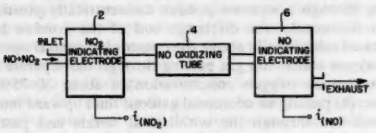
said mandrel means also defining surfaces for the pressing thereagainst of each of the folded end panels of the divider.

4,315,753

ELECTROCHEMICAL APPARATUS FOR SIMULTANEOUSLY MONITORING TWO GASES

Stanley Bruckenstein, Williamsville, and John A. Kosek, Buffalo, both of N.Y., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Aug. 14, 1980, Ser. No. 177,978
Int. Cl.[3] G01N *27/30, 27/40, 27/52*
U.S. Cl. 23—232 E 43 Claims



30. A method for simultaneously monitoring the presence of first and second members of a family of oxygen-containing gases in a sample of gas, said method comprising the steps of:

(a) electroreducing at least a portion of the first member in the sample to derive a first electrical signal while forming a first gas mixture comprising electroreduction products, unreduced first member and second member;

(b) oxidizing the second member in said first gas mixture to convert all of the second member present in said first gas mixture to the first member to form a second gas mixture;

(c) electroreducing at least a portion of the first member and in said second gas mixture to derive a second electrical signal; and

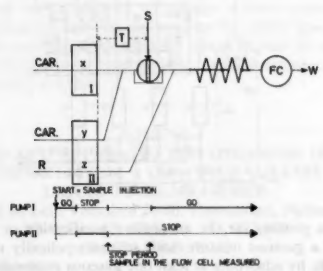
(d) electronically processing said first and second electrical signals to generate first and second output signals respectively representative of the amount of the first and second members present in the sample.

4,315,754

FLOW INJECTION ANALYSIS WITH INTERMITTENT FLOW

Jaromir Ruzicka, Copenhagen, and Elo H. Hansen, Lyngby, both of Denmark, assignors to Bifok AB, Sollentuna, Sweden

Filed Aug. 28, 1979, Ser. No. 70,658
Int. Cl.[3] G01N *35/08, 33/14, 33/66*
U.S. Cl. 23—230 R 7 Claims



1. A method of analyzing a material within a flowing liquid carrier, comprising the steps of:

(a) forming an entirely liquid flowing carrier stream;

(b) injecting a discrete, well-defined liquid sample portion into said carrier;

(c) introducing at least one reagent in the form of a liquid to said sample portion by intermittently activating separate pumps disposed to transport said carrier and said reagent respectively at pre-programmed timed intervals, activation of said pumps being controlled by the step of injecting said sample portion; and

conducting the combination of said sample and said reagent to a flow-through detector for analysis while controlling dispersion of said sample in said conduit and said detector to optimize desired chemical reactions.

4,315,755

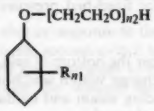
HYDROCARBON OILS CONTAINING 1 TO 10 PERCENT EMULSIFIED WATER AND EMULSIFIERS THEREFOR

Karl M. E. Hellsten, Ödsmal; Inger G. Johansson, Svanesund, and Birgit T. G. Karlsson, Stenungsund, all of Sweden, assignors to Berol Kemi A.B., Stenungsund, Sweden

Filed Jun. 30, 1980, Ser. No. 164,101
Claims priority, application Sweden, Jun. 29, 1979, 7905716
Int. Cl.[3] C10L *1/32*
U.S. Cl. 44—51 11 Claims

1. A hydrocarbon oil containing 1 to 10% emulsified water comprising:

(a) a nonionic surface-active ethylene oxide adduct having the general formula:



in which:

n_1 = 1 to 5;

n_2 = a number selected to give a polyethylene glycol chain in a weight percent within the range from about 50 to about 60% by weight of the adduct; and

R = alkyl of from about one to about twenty-four carbon atoms, the alkylphenyl group having from about twelve to about thirty carbon atoms; and

(b) the calcium salt of dodecylbenzene sulphonic acid; the weight ratio nonionic surface-active ethylene oxide adduct to calcium salt of dodecyl benzene sulphonic acid being within the range from about 80:20 to about 40:60.

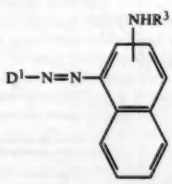
4,315,756

OIL-SOLUBLE AZO DYE WITH N-SUBSTITUTED β-NAPHTHYLAMINE AS COUPLING COMPONENT

Georg Zeidler, Limburgerhof; Johannes Dehnert; Guenter Hansen, both of Ludwigshafen, and Guenther Riedel, Heidelberg-Wieblingen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 5, 1974, Ser. No. 529,900
Int. Cl.[3] C10L *1/10, 1/22;* C09B *35/02, 33/02*
U.S. Cl. 44—59 13 Claims

1. A compound of the formula



wherein:

D^1 is phenylazophenyl or tolylazotolyl; and

R^3 is n-hexyl, n-octyl, 3,5,5-trimethylhexyl, tridecyl, β-ethylhexoxypropyl, cyclohexyl, benzyl or phenylethyl.

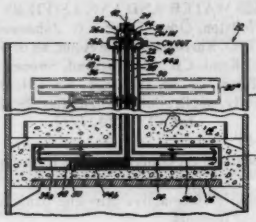
4,315,757
COAL GASIFICATION APPARATUS

Donald E. Woodmansee, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 70,637, Aug. 27, 1979, Pat. No. 4,257,782. This application Jul. 14, 1980, Ser. No. 168,013

Int. Cl.³ C10J 3/32

U.S. Cl. 48—71 **3 Claims**



1. An apparatus for fixed-bed pressure gasification of coal comprising:

a closed housing;

a grate disposed near the bottom of said housing for supporting a coal bed charge within said housing;

means for introducing steam and oxidant into said housing near the bottom thereof;

a stirrer having a shaft and a rabble arm mounted thereon for rotation thereof through said coal bed, said stirrer having closed conduit means for conducting a flow of coolant through said shaft and said rabble arm without discharge of any coolant into said bed; and

means for conducting a separate flow of hydrocarbon through said shaft in indirect heat exchange relationship with and substantially surrounded by said coolant flow, said hydrocarbon conducting means having means for discharging cooled hydrocarbon into the interior of said bed.

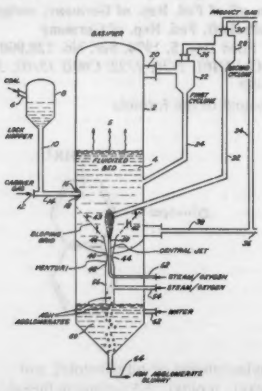
4,315,758
PROCESS FOR THE PRODUCTION OF FUEL GAS FROM COAL

Jitendra G. Patel, Bolingbrook; William A. Sandstrom, Chicago, and Paul B. Tarman, Elmhurst, all of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Filed Oct. 18, 1979, Ser. No. 85,934

Int. Cl.³ C10J 3/54

U.S. Cl. 48—197 R **7 Claims**



1. In a process for the conversion of a solid, agglomerating hydrocarbonaceous solid to a more valuable gaseous product wherein (i) an oxygen containing gas in admixture with steam is contacted with the solid at elevated temperatures in a fluidized bed gasification reaction zone, (ii) ash is agglomerated in the bottom portion of the reaction zone, and (iii) the ash is selectively separated from the fluidized bed by withdrawing the ash from the bottom portion of the reaction zone through a withdrawal nozzle having a constricted central opening wherein the ash agglomerates have a tendency to occlude the nozzle and the central opening thereof, the improvement which comprises (a) passing an oxygen containing gas into the nozzle, through a separate conduit concentrically positioned within the nozzle, the discharge end of the conduit being positioned substantially above the constricted central opening, said oxygen containing gas passing through the separate conduit having an oxygen concentration of about 30–75% by volume, (b) passing an additional gaseous fluid upward into the fluidized bed through the withdrawal nozzle and past the outside of the separate conduit, said additional gaseous fluid having an oxygen concentration less than the oxygen concentration in the gas passing through the separate conduit, said nozzle being positioned below the fluidized bed and being concentrically surrounded by a fluid distribution and support grid, and (c) passing an additional gaseous fluid substantially free of oxygen through the fluid distribution and support grid, said oxygen containing gas, said additional gaseous fluid passing through said nozzle, and said additional gaseous fluid passing through said grid providing a superficial gas velocity of at least 2 ft/sec. through the fluidized oed.

4,315,759
ADSORPTION PROCESS PRODUCING CHRONOLOGICALLY CONSTANT AMOUNT OF A RESIDUAL GAS

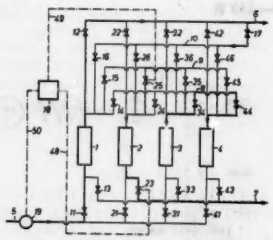
Christian Benkmann, Munich, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Hollriegelskreuth, Fed. Rep. of Germany

Filed Jul. 23, 1980, Ser. No. 171,519

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1979, 2930782

Int. Cl.³ B01D 53/04

U.S. Cl. 55—18 **15 Claims**



1. In a process for the adsorptive purification or fractionation of a gaseous mixture with several cyclically reversible adsorbers, by adsorbing at least one gaseous component of the gaseous mixture in the adsorbers, each of the adsorbers passing, with chronological displacement, through respectively substantially identical switching cycles, each switching cycle comprising an adsorption phase, at least one expansion phase, a purging phase operated with a purging gas and at least one pressure build-up phase, wherein the at least one expansion phase and the purging phase each produce gas fractions enriched in the at least one gaseous component, the sum total of the gas fractions comprising a residual gas stream, the improvement wherein the volume or mass of the residual gas stream is maintained chronologically substantially constant by regulating the respective volume streams and/or mass streams of the gas fractions obtained during the at least one expansion

phase and the volume streams or mass streams of the purging gas introduced into the adsorber during the purging phase.

15. In an apparatus for the adsorptive purification or fractionation of a gaseous mixture, the apparatus including at least three interconnected adsorbers for adsorbing at least one gaseous component of the gaseous mixture, and each adsorber adapted to operate in identical switching cycles comprised of an adsorption phase, at least one expansion phase, a purging phase, and at least one pressure build-up phase, the adsorbers arranged for operation in a chronologically cyclically displaced manner with respect to each other, whereby the adsorbers are adapted to produce gas fractions enriched in the at least one gaseous component during the respective at least one expansion phase and the purging phase thereof, the sum total of the gaseous fractions produced by the at least three adsorbers comprising a residual gas stream, the adsorbers having respective outlets for releasing the gaseous fractions with the outlets connecting into one outlet line for passing the residual gas stream therethrough, and lines interconnecting the adsorbers with each other for passing gas released from one adsorber during the at least one expansion phase thereof to another adsorber as the purge gas therefor, the improvement comprising:

sensing means operatively associated with an inlet to said adsorbing apparatus for sensing and measuring the quantity of gaseous mixture entering said adsorbing apparatus;

a plurality of respective first outlet valve means having variable stroke opening characteristics for controlling volume or mass streams flowing therethrough, each outlet valve means of said plurality of outlet valve means arranged in the outlet of each of said at least three adsorbers through which said gas fractions are removed;

a plurality of second valve means having variable stroke opening characteristics for controlling volume or mass streams flowing therethrough, a respective second valve means of said plurality of second valve means arranged in each of one of the lines interconnecting each of said at least three adsorbers with each other for controlling the flow of a purge gas stream produced during the at least one expansion phase of one of the at least three adsorbers to another of the at least three adsorbers; and

control means connected to said sensing means for receiving a signal corresponding to the sensed and measured quantity of gaseous mixture entering the apparatus, and respectively connected to each one of said respective first outlet valve means and to each one of said second valve means for transmitting a signal thereto, said signal corresponding to said sensed quantity of gaseous mixture entering the apparatus for individually varying the stroke openings of all the variable stroke opening valves to thereby maintain a substantially chronologically constant volume or mass residual gas stream.

4,315,760

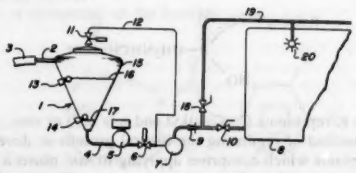
METHOD AND APPARATUS FOR DEGASING, DURING TRANSPORTATION, A CONFINED VOLUME OF LIQUID TO BE MEASURED

Jan D. bij de Leij, Veensluis 24-30, Heerenveen, Netherlands

Filed Jan. 17, 1980, Ser. No. 112,909

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—46 **5 Claims**



1. A method of degassing a confined volume of a liquid to be measured during the transportation of the liquid from a liquid supply vessel to a liquid storage vessel by means of apparatus including a gas separation vessel, a liquid volume meter, a fluid vacuum pump, a first valve selectively connecting the suction side of the pump to the bottom of the gas separation vessel, a second valve selectively connecting the suction side of the pump to the top of the gas separation vessel, a first switch responsive to a first liquid level in the gas separation vessel and a second switch responsive to a higher second liquid level in the gas separation vessel, said method comprising the steps of:

supplying liquid from the liquid supply vessel to the gas separation vessel until the liquid supply vessel is empty;

operating the vacuum pump;

opening the second valve in response to the first liquid level being detected by the first switch to permit withdrawal of gas from the gas separation vessel by the vacuum pump;

closing the first valve in response to the first liquid level being detected by the first switch to permit the liquid level in the gas separation vessel to rise;

closing the second valve in response to the second liquid level being detected by the second switch to prevent the withdrawal of gas from the gas separation vessel by the vacuum pump;

opening the first valve in response to the second liquid level being detected by the second switch to permit withdrawal of liquid from the gas separation vessel to the liquid storage vessel through the volume meter by the vacuum pump;

reclosing the second valve in response to detection by the second switch of the level of the liquid in the gas separation vessel falling from the second liquid level to a point between the second liquid level and the first liquid level; and

reopening the first valve when the second valve is reclosed.

2. Apparatus for degassing a confined volume of liquid to be measured during the transportation of the liquid from a supply vessel to a liquid storage vessel, said apparatus comprising:

a gas separation vessel having a top and a bottom;

means providing fluid communication between said supply vessel and said gas separation vessel;

a liquid discharge conduit providing liquid communication between said bottom of said gas separation vessel and said liquid storage vessel;

means disposed in said liquid discharge conduit for measuring the volume of liquid passing therethrough;

a gas discharge conduit providing gas communication with said top of said gas separation vessel;

a continuously operating fluid vacuum pump connected on the suction side thereof to said liquid discharge conduit and to said gas discharge conduit;

a first valve disposed in said liquid discharge conduit between said vacuum pump and said gas separation vessel and adapted to be selectively opened to permit said vacuum pump to withdraw liquid from said gas separation vessel to said liquid storage vessel through said liquid discharge conduit and to be selectively closed to prevent the flow of liquid from said gas separation vessel through said liquid discharge conduit;

a second valve disposed in said gas discharge conduit between said gas separation vessel and said vacuum pump and adapted to be selectively opened to permit said vacuum pump to withdraw gas from said gas separation vessel through said gas discharge conduit and selectively closed to prevent the flow of gas from said gas separation vessel through said gas discharge conduit;

a first level switch responsive to a first liquid level in said gas separation vessel and being operative to open said second valve and to close said first valve when the level of the liquid falls to said first liquid level; and

a second level switch responsive to a second liquid level higher than said first liquid level in said gas separation vessel, said second level switch being operative to open said first valve and to close said second valve when the

level of the liquid rises to said second liquid level and to open said second valve and close said first valve when the level of the liquid falls to a point between said second liquid level and said first liquid level from said second liquid level.

4,315,761

METHOD FOR BINDING AND CLEARING ANIMAL WASTE PRODUCTS

Karl I. Larrson, Hevigsgatan 6, 702 25 Orebro, and Per A. H. Jakobsson, Blombergsvagen 24M, 720 30 Orebro, both of Sweden

Filed Nov. 15, 1979, Ser. No. 76,566
Claims priority, application Sweden, Oct. 10, 1978, 7810566
Int. Cl.³ C05F 3/00
U.S. Cl. 71—21 2 Claims

1. In the treatment of animal excrement and urine with an animal litter in an amount sufficient to bind and clear said excrement and urine, the improvement which comprises using as said animal litter, grains of porous calcium hydrosilicate in the form of foamed or aerated concrete, said grains having a size between 0.5 mm and 10 mm.

4,315,762

USE OF ALUMINUM TRIS(-O-ETHYL PHOSPHONATE) AS AN AMMONIUM NITRIFICATION COMPOUND

Thomas O. Evrard, Little Rock, Ark., assignor to Olin Corporation, New Haven, Conn.

Filed May 12, 1980, Ser. No. 148,848
Int. Cl.³ C05G 3/08
U.S. Cl. 71—27 6 Claims

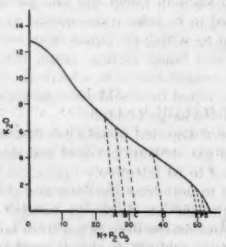
1. A method for inhibiting the nitrification of ammonium-nitrogen in soil which comprises treating the soil with an effective nitrification-inhibiting amount of aluminum tris(-O-ethyl phosphonate).

4,315,763

HIGH ANALYSIS LIQUID FERTILIZERS

Jerry H. Stoller, Bunkerhill, Tex., and Harold A. Hartung, Collingswood, N.J., assignors to Stoller Enterprises, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 954,733, Oct. 30, 1978, abandoned. This application Feb. 7, 1980, Ser. No. 119,429
Int. Cl.³ C05C 9/00
U.S. Cl. 71—29 31 Claims



1. A high analysis, non-ammoniated, liquid fertilizer which is the reaction product of urea and phosphoric acid or a mixture of phosphoric acid and sulfuric acid, and characterized as a clear liquid, which does not salt out at 0° C., has a pH of less than 4 and has an analysis of N and P_2O_5 and K_2O totaling at least 25 weight percent of the fertilizer in the ranges of >0 to 30 wt. % N, 5 to 50 wt. % P_2O_5 and 0 to 12 wt. % K_2O.

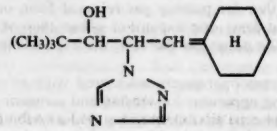
4,315,764

1-ALLYLTRIAZOLE DERIVATIVES, PROCESSES FOR THEIR PREPARATION AND THEIR USE AS PLANT PROTECTION AGENTS

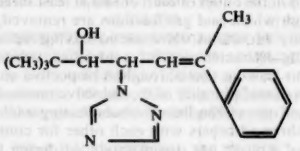
Wolf Reiser; Wilfried Draber; Karl H. Büchel, all of Wuppertal; Klaus Lürssen, Bergisch-Gladbach; Paul-Ernst Frohberger, Leverkusen, and Volker Paul, Solingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 4, 1980, Ser. No. 118,335
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1979, 2905981
Int. Cl.³ A01N 43/64; C07D 249/08
U.S. Cl. 71—76 7 Claims

1. A compound selected from the group consisting of 1-cyclohexylidene-4,4-dimethyl-2-(1,2,4-triazol-1-yl)-pentan-3-ol of the formula



2,2-dimethyl-6-phenyl-4-(1,2,4-triazol-1-yl)-5-hepten-3-ol of the formula



or an acid addition salt or metal salt complex thereof.

4. A fungicidal or plant-growth-regulating composition containing as active ingredient a fungicidally or plant growth regulating effective amount of a compound, acid addition salt or metal salt complex according to claim 1 in admixture with a diluent.

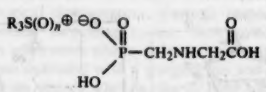
4,315,765

TRIALKYLSULFONIUM SALTS OF N-PHOSPHONOMETHYLGLYCINE AND THEIR USE AS PLANT GROWTH REGULATORS AND HERBICIDES

George B. Large, Orinda, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

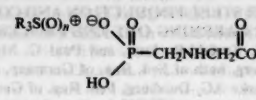
Filed Dec. 4, 1980, Ser. No. 212,921
Int. Cl.³ C07F 9/38; A01N 31/00, 57/20
U.S. Cl. 71—87 15 Claims

1. A compound having the formula



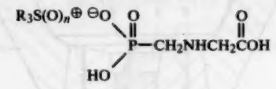
in which R represents C_1–C_3 alkyl and n is zero or one.

7. A method of regulating the natural growth or development of plants which comprises applying to said plants a biologically active composition comprising (a) an effective, plant-regulating, non-lethal amount of a compound having the formula



in which R represents C_1–C_3 alkyl and n is zero or one, and (b) an inert diluent carrier.

13. A method of controlling undesirable vegetation comprising applying to the vegetation in postemergent state an herbicidal composition comprising an herbicidally effective amount of a compound having the formula



in which R represents C_1–C_3 alkyl and n is zero or one, and an inert diluent carrier.

4,315,766
4H-3,1-BENZOXAZINE DERIVATIVES

Gerhard Hamprecht, Weinheim, and Bruno Wuerzer, Otterstadt, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

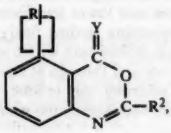
Filed Apr. 8, 1980, Ser. No. 138,414

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1979, 2914915

Int. Cl.³ A01N *43/86;* C07D *265/22*

U.S. Cl. 71—88 **10 Claims**

1. 4H-3,1-Benzoxazine derivatives of the formula



(I)

where

Y is oxygen or sulfur, $Ar(R^6)_n$, Ar denoting phenyl, R^6 denoting haloalkoxy or haloalkylmercapto, each of 1 to 4 carbon atoms, and n being 1 or 2.

6. A process for combating unwanted plant growth, wherein the plants or the soil are treated with a herbicidally effective amount of a 4H-3,1-benzoxazine derivative of the formula I as claimed in claim **1**.

4,315,767
TRIAZOLONE HERBICIDES

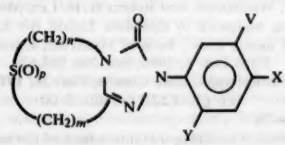
Anthony D. Wolf, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 926,120, Jul. 19, 1978, Pat. No. 4,214,891, which is a division of Ser. No. 823,204, Aug. 9, 1977, Pat. No. 4,139,364. This application Dec. 14, 1979, Ser. No. 103,958

Int. Cl.³ A01N *43/02;* C07D *513/00, 513/02*

U.S. Cl. 71—91 **13 Claims**

1. A compound of the formula



where

V is hydrogen, fluorine, chlorine, bromine, methyl or OR where R is alkyl of 1–4 carbon atoms;

X is hydrogen, fluorine, chlorine, bromine, cyano, methyl, methoxy, or nitro;

Y is hydrogen, fluorine, chlorine, bromine, or methyl;

m is 0,1,2,3, or 4;

n is 1,2,3 or 4;

Q is oxygen or sulfur; and

p is 0, 1 or 2

with the proviso that

(1) n+m=2, 3, or 4; and

(2) if n+m=2 or 4, then Y, X is other than hydrogen.

6. A composition for the control of undesirable vegetation consisting essentially of a compound of claim **1** and at least one of (a) a surface-active agent and (b) a solid or liquid inert diluent.

4,315,768
OXIMECARBAMATE DERIVATIVES, AND THEIR PRODUCTION AND USE

Yoshiaki Kosuge, Takarazuka; Ryo Yoshida, Kawanishi; Seizo Sumida, Nishinomiya; Hirofumi Oshita, Takarazuka; Soji Otsuki, Toyonaka, and Katsuzo Kamoshita, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

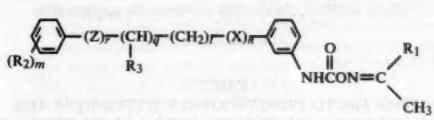
Filed Aug. 13, 1979, Ser. No. 65,838

Claims priority, application Japan, Aug. 25, 1978, 53/104127

Int. Cl.³ C07C *131/00;* A01N *33/24*

U.S. Cl. 71—98 **9 Claims**

1. A compound of the formula:



wherein R_1 is methyl, R_2 is lower alkyl, lower alkoxy, methylthio, halogen or trifluoromethyl, R_3 is hydrogen, methyl or ethyl, X and Z are each oxygen or sulfur, m is an integer of 0 to 5 when R_2 is fluorine only or an integer of 0 to 3 when any R_2 is other than fluorine, R_2 being same or different in case of m being an integer of 2 or 3, n and r are each an integer of 0 to 1 but when one of them is zero, the other is not zero, q is an integer of 0 or 1 and t is an integer of 0 to 4.

8. A herbicidal composition which comprises as an active ingredient a herbicidally effective amount of the compound according to claim **1** and a carrier therefor.

9. A method of selectively combating weeds in cultivation of soybean, cotton, sugar beet, rice or wheat, which comprises applying a herbicidally effective amount of the compound according to claim **1** to the area wherein the soybean, cotton, sugar beet, rice or wheat is cultivated.

4,315,769
HERBICIDALDIURETHANES AND THEIR USE

Gerhard Boroschewski, and Friedrich Arndt, both of Berlin, Fed. Rep. of Germany, assignors to Schering AG, Berlin and Bergkamen, Fed. Rep. of Germany

Continuation of Ser. No. 610,909, Sep. 5, 1975, abandoned, which is a continuation of Ser. No. 444,409, Feb. 21, 1974, abandoned. This application Nov. 21, 1979, Ser. No. 96,576

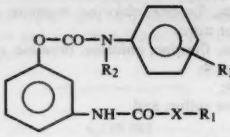
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1973, 2310649

The portion of the term of this patent subsequent to Aug. 14, 1996, has been disclaimed.

Int. Cl.³ A01N *37/44*

U.S. Cl. 71—111 **8 Claims**

1. A method of controlling weeds in a crop of cotton, comprising the step of applying to said weeds and to said crop an effective amount of a herbicidal compound of the formula



wherein

R_1 is methyl or ethyl;

R_2 is propyl, butyl, isobutyl, or benzyl;

R_3 is hydrogen, methyl, ethyl, or methoxy and

X is oxygen.

4,315,770

DISPERSION STRENGTHENED METALS

Anil V. Nadkarni, Mentor, Ohio, assignor to SCM Corporation, New York, N.Y.

Filed May 2, 1980, Ser. No. 146,140

Int. Cl.³ B22F *9/00*

U.S. Cl. 75—0.5 BC **10 Claims**

1. In a process for dispersion-strengthening atomized alloy particles having an average particle size less than about 300 microns by internally oxidizing said alloy particles, the improvement comprising:

providing atomized alloy particles being substantially free of oxide surface film whereby said alloy is internally oxidized without obstruction of the oxide surface film.

4,315,771

PROCESS TO CONTINUOUSLY DETERMINE THE PROFILE OF A CHARGE FED INTO A BLAST FURNACE

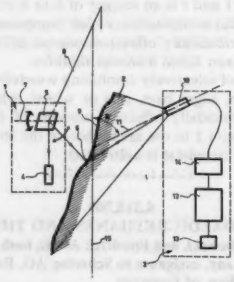
Jean-Paul Bobillon, Metz, France, assignor to Institut de Recherches de la Siderurgie Francaise, Saint-Germain-en-Laye, France

Filed Jan. 30, 1980, Ser. No. 116,802

Claims priority, application France, Jan. 31, 1979, 79 02830

Int. Cl.³ C21B *7/24*

U.S. Cl. 75—41 **4 Claims**



1. A process to continuously determine by optical means the profile of a charge fed into a blast furnace, comprising the steps of sweeping the surface of said charge in a plane intersecting the surface with a beam of light so as to produce at the intersection of said plane with the surface a luminous trace; observing said luminous trace from a point outside said sweeping plane; and determining on the basis of the data defining the sweeping plane, the observation point and the direction of observation with respect to the plane the true position of the points constituting said luminous trace.

4,315,772

PROCESS FOR STEEL PRODUCTION AND CONVERTER FOR CARRYING OUT THE PROCESS

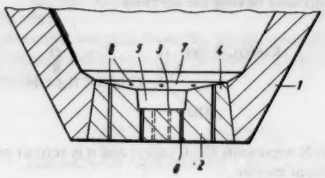
Manfred Chitil, Krefeld-Bockum, and Paul G. Mantey, Sulzbach-Rosenberg, both of Fed. Rep. of Germany, assignors to Klöckner-Werke AG, Duisburg, Fed. Rep. of Germany

Filed Mar. 12, 1980, Ser. No. 129,731

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1979, 2910103; Nov. 22, 1979, 2947078; Dec. 11, 1979, 2949717

Int. Cl.³ C21C *5/48*

U.S. Cl. 75—52 **16 Claims**



1. A two-step process for the production of steel using a converter and a quantity of charge material such as iron scrap, iron sponge, or other essentially iron carriers, wherein a column of the charge material is inserted in solid form into the converter having a plurality of nozzles lying in the bottom area thereof at upper and lower levels, a sump being formed in said bottom area into which said lower level nozzles extend, first step of the process comprising forming a molten bath at said bottom area by least partly melting the charge material by the combustion of fuel in the presence of oxygen moving in a counter current with the use of said higher level nozzles and which are operated as fuel-oxygen burners, the level of said molten bath lying above said lower level nozzles, the second step of the process comprising feeding finely distributed carbon and oxygen into said molten bath within said sump respectively through at least one and through at least another of said lower level nozzles, whereby the residue quantity of the charge material is melted and thereby the entire molten charge is overheated.

4,315,773

DESULFURIZATION MIXTURE AND PROCESS FOR DESULFURIZING PIG IRON

Alfred Freissmuth, Trostberg; Werner Gmohling, Hufschlag, and Heinrich Rock, Trostberg, all of Fed. Rep. of Germany, assignors to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

Filed Nov. 27, 1979, Ser. No. 97,858

Int. Cl.³ C21C *7/02*

U.S. Cl. 75—58 **10 Claims**

1. A process which comprises desulfurizing pig iron with a mixture of calcium carbide, a gas-evolving component, and about 2 to 20 pbw, based on the total weight of the mixture, of fluorspar.

4,315,774

METHOD OF SAFELY INJECTING OXYGEN REACTIVE MATERIALS INTO A SUBMERGED OXYGEN GAS STREAM

Guy Savard, Westmount, and Robert G. H. Lee, Montreal, both of Canada, assignors to Canadian Liquid Air Ltd. and Air Liquide Canada Ltée., both of Montreal, Canada

Filed Oct. 6, 1980, Ser. No. 194,621

Claims priority, application Canada, Oct. 31, 1979, 338906

Int. Cl.³ C22B *23/02, 15/06*

U.S. Cl. 75—74 **10 Claims**

1. A method of smelting metal in a bath of the molten metal comprising injecting oxygen into said molten metal in a stream adjacent to a stream of a protective fluid, said stream of protec-

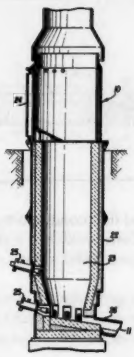
tive fluid surrounding said stream of oxygen and conveying an ore of said metal, said ore being reactive with oxygen, in a particulate form into said molten metal in said stream of protective fluid.

4,315,775

CONTINUOUS MELTING AND REFINING OF SECONDARY AND/OR BLISTER COPPER

Robert R. Odle, Harvey, La.; Milton E. Berry; William W. Brunson; William R. Burson; Daniel B. Cofer, and Roy Richards, all of Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Filed Nov. 28, 1979, Ser. No. 98,000
Int. Cl.³ C22B *15/14*
U.S. Cl. 75—76 **22 Claims**



1. An improved process for continuously refining secondary and blister copper to produce and continuously cast anode grade copper of the type including the successive steps of melting, oxidizing, slagging, then reducing the copper, thereby removing impurities therefrom;

wherein the improvement comprises the separate steps of:

(a) continuously melting copper containing impurities in a vertical shaft furnace, converting some of the impurities to initial slags and adjusting the oxygen content of the molten copper to about 0.1% therein, to produce a substantially continuous stream of molten copper containing impurities and slags;

(b) flowing said stream into a first slag vessel, located between said shaft furnace and a subsequent holding furnace skimming initial slag from the surface of the molten copper stream while in said slag vessel as said stream drains from the shaft furnace towards a holding furnace;

(c) flowing said stream into a first holding furnace and controlling the temperature and flow of molten copper while in the holding furnace;

(d) directing the molten copper stream from the holding furnace into an oxidation vessel;

(e) continuously oxidizing the molten copper and the impurities forming slag suspended in the flowing stream of oxidized copper;

(f) continuously transferring the stream of oxidized molten copper and the slag having the impurities from the oxidation vessel to a second slag vessel;

(g) reducing the flow rate of said stream in said second slag vessel so that suspended slag particles float towards the surface of the molten copper stream, separating said stream into an upper layer containing mostly molten slag and a lower layer containing mostly molten copper, then skimming said upper layer of slag from the copper surface thereby removing most impurities from the flowing stream of oxidized copper;

(h) flowing the oxygen rich molten copper stream into a reduction vessel;

(i) continuously injecting small bubbles of ammonia into the bottom of said reduction vessel, and allowing said ammonia to react with oxygen rich molten copper stream, thereby reducing the oxygen content of the copper;

(j) collecting a supply of refined molten copper in a second holding vessel while regulating the temperature and flow rate of molten copper from said vessel;

(k) supplying the refined molten copper to a casting ladle; and

(l) casting the refined molten copper into molds to form solid products.

4,315,776

METHOD OF PRODUCING LIGHT GAGE METALLIC STRIP MATERIAL

Richard K. Pitler, Gibsonia, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Aug. 23, 1979, Ser. No. 69,010
Int. Cl.³ B22F *3/14, 3/16, 3/24, 5/00*
U.S. Cl. 75—208 R **12 Claims**

11. An improved method of producing a coil of light gage metallic strip material comprising the steps of:

disposing a powder mixture of high temperature alloy into a cylindrical carbon steel container and around the periphery of a cylindrical carbon steel mandrel centrally disposed inside the container with respect to the longitudinal axis of the container, said mandrel having its end portions adapted for mounting onto a rotating mechanism,

compressing the powder mixture in the container about the mandrel into at least an 85% dense compact cylindrical billet having homogeneous structure, grain size and chemical composition, said billet being integrally compressed into engagement with the mandrel and the container to form a composite cylindrical article,

mounting the end portions of the mandrel in the composite article onto a rotating mechanism,

rotating the cylindrical article about its longitudinal axis by engaging the rotating mechanism,

peeling a continuous light gage layer from the exterior surface of the rotating article by advancing a cutting edge of a cutting tool into subsurface contact with the exterior surface of the rotating article along the full longitudinal extent of the exterior surface of the rotating article, whereby the container is removed as an initially peeled layer, and

continuing peeling until an integral layer of carbon steel is peeled from the mandrel.

4,315,777

METAL MASS ADAPTED FOR INTERNAL OXIDATION TO GENERATE DISPERSION STRENGTHENING

Anil V. Nadkarni, Mentor; Warren J. Haws, Berea, and Charles I. Whitman, Bay Village, all of Ohio, assignors to SCM Corporation, New York, N.Y.

Filed Aug. 7, 1979, Ser. No. 64,371
Int. Cl.³ B22F *3/00*
U.S. Cl. 75—232 **9 Claims**

1. A process for dispersion strengthening metal by internal oxidation, comprising:

forming a substantially uniform coherent mass of alloy and oxidant, wherein said alloy comprises a matrix metal having a negative free energy of oxide formation at 25° C. of 0 to 70 kilocalories per gram atom of oxygen and a solute metal having a negative free energy of oxide formation exceeding that of said matrix metal by at least about 60 kilocalories per gram atom of oxygen at 25° C., and said oxidant being a heat-reducible metal oxide having a negative free energy of oxide formation at 25° C. less than the negative free energy of oxide formation of the solute metal for oxidizing the solute metal to a solute metal oxide; and

oxidizing said solute metal under internal oxidation conditions to dispersion strengthen said coherent mass.

4,315,778

FLUX COMPOSITION FOR CERAMIC COLOR, CONTAINING NO HARMFUL HEAVY METAL

Kimitoshi Ueno, 1-17-9, Nishi Mizuhodai, Fujimishi, Saitamaken, and Toshio Yoshida, 3928, Fujikubo, Miyoshimachi, Irumagun, Saitamaken, both of Japan

Filed Apr. 7, 1980, Ser. No. 137,956

Claims priority, application Japan, Jul. 5, 1979, 54-84450

Int. Cl.³ C09D 5/34; C03C 3/22

U.S. Cl. 106—19 **1 Claim**

1. A flux composition for ceramic color containing no heavy metal and comprising 30 to 45% by weight of SiO_2, 0 to 5% by weight of TiO_2, 4 to 10% by weight of ZrO_2, 13 to 18% by weight of B_2O_3, 18 to 23% by weight of ZnO, 0 to 3% by weight of CaO, 12 to 15% by weight of the total of two or three kinds of R_2O selected from Na_2O, K_2O and Li_2O, 4 to 10% by weight of fluorine and 0 to 5% by weight of tin oxide.

4,315,779

NON-ADHESIVE GEL COMPOSITIONS FOR STABILIZING DENTURES

Allen Heyd, Norwalk, Conn., and Nutan B. Shah, New Rochelle, N.Y., assignors to Richardson-Vicks Inc., Wilton, Conn.

Filed Oct. 1, 1979, Ser. No. 80,583

Int. Cl.³ A61C 13/22; C08L 1/28, 5/00, 5/04

U.S. Cl. 106—35 **8 Claims**

1. A substantially non-adhesive gel composition for improving the adaptation of dentures to the oral cavity of the wearer thereof, comprising about 1 to about 10% by weight of a hydrophilic cellulose polymer, an alginate or xanthan gum, from about 5 to about 40% by weight of a demulcent selected from the group consisting of glycerine, sorbitol and propylene glycol and from about 50 to about 95% by weight water.

4,315,780

METHOD FOR CLEANING FIREARMS

Anthony P. Rupp, Stamford, Conn.; Salvatore Intrieri, Jr., Mount Kisco, and Arthur H. Walkley, IV, Bedford Hills, both of N.Y., assignors to Belltown, Ltd., Stamford, Conn.

Filed Aug. 4, 1980, Ser. No. 174,803

Int. Cl.³ B08B 7/00

U.S. Cl. 134—7 **4 Claims**

1. A method for removing lead and carbon deposits from the interior portions and cylinder faces of firearms which comprises applying thereto a liquid composition impregnated into an absorbent web, said composition consisting essentially of from about 45 to about 55 weight percent of aluminum oxide, from about 40 to about 50 weight percent of a hydrocarbon oil boiling in the range of about 150 degrees to 350 degrees centigrade, from about 3.5 to about 4.5 weight percent of lemon oil, and from 0.5 to about 1.5 weight percent of ammonium chloride.

4,315,781

METHOD OF CONTROLLING MOSFET THRESHOLD VOLTAGE WITH SELF-ALIGNED CHANNEL STOP

Richard C. Henderson, Westlake Village, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Apr. 23, 1980, Ser. No. 142,902

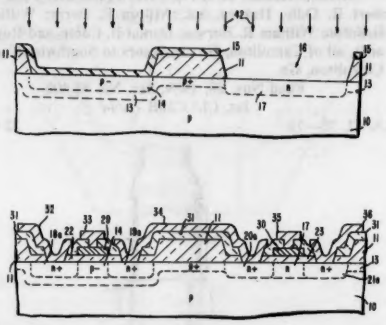
Int. Cl.³ H01L 21/263, 29/78, 27/04

U.S. Cl. 148—1.5 **12 Claims**

1. A method of setting threshold voltage of enhancement mode MOSFET devices formed on a semiconductor substrate doped with atoms of a first conductivity type which includes forming source, drain and gate regions in at least one portion of said substrate and making electrical connections to said regions, wherein the improvement comprises setting threshold voltage prior to forming said regions by adjusting the difference between two implantations of atoms of different conductivity type into said at least one portion by a process which comprises:

(a) forming a dielectric film covering portions of a surface of said substrate, which forms a semiconductor/dielectric interface, the exposed portions comprising said regions to be formed;

(b) implanting into said substrate atoms of the same conductivity type as said first conductivity type under conditions such that said atoms evidence a peak distribution in said substrate just beneath said semiconductor/dielectric interface; and



(c) implanting into said substrate atoms of a second conductivity type under conditions such that essentially no atoms of said second conductivity type penetrate said dielectric film.

4,315,782

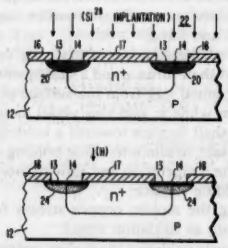
METHOD OF MAKING SEMICONDUCTOR DEVICE WITH PASSIVATED RECTIFYING JUNCTIONS HAVING HYDROGENATED AMORPHOUS REGIONS

Ming L. Tarng, Mercerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 21, 1980, Ser. No. 170,813

Int. Cl.³ H01L 21/265, 21/26

U.S. Cl. 148—1.5 **12 Claims**



1. A method for providing a semiconductor device having a rectifying junction disposed in a crystalline region of the device portion with a passivated surface over the junction comprising the steps of:

(a) depositing metal over the surface of the device;

(b) removing the metal defined by a photolithographically deposited resist from the surface portions of the device to expose the rectifying junction;

(c) converting the region adjacent said surface of the rectifying junction into an amorphous layer of graded crystallinity; and

(d) exposing the amorphous layer to atomic hydrogen

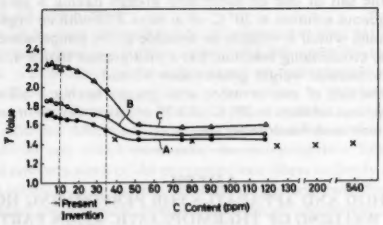
whereby an integral layer of hydrogenated amorphous semiconductor material is formed adjacent the crystalline region.

4,315,783

METHOD OF PRODUCING NON-AGEING COLD ROLLED STEEL STRIP WITH EXCELLENT DEEP-DRAWABILITY BY CONTINUOUS HEAT TREATMENT

Osamu Akisue; Teruaki Yamada, both of Himeji; Munetsugu Matsuo, Kawasaki, and Norimasa Uehara, Kimitsu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Oct. 17, 1979, Ser. No. 85,512
Claims priority, application Japan, Oct. 21, 1978, 53-129071
Int. Cl.³ C21D *8/04*
U.S. Cl. 148—12 C **6 Claims**



1. A method for producing a non-ageing high workability, cold rolled steel strip having excellent deep-drawability by a continuous heat treatment, which comprises continuously hot rolling an Al-killed steel containing 0.0010 to 0.0035% C, not larger than 0.45% Mn, nitrogen in an amount not over 0.005%, 0.015 to 0.090% sol.Al from a temperature range where Al and N are completely in solid solution, coiling the hot rolled strip at a temperature not lower than 580° C., cold rolling the strip, rapidly heating the cold rolled strip, holding the strip at a soaking temperature ranging from 680° C. to 900° C. for a short time and cooling the strip, and in which the steel produced has a $\bar{r}$ value of at least 1.5, an ageing index of not over 3 kg/mm^2, and simultaneously the characteristic that no secondary work cracking is caused to occur.

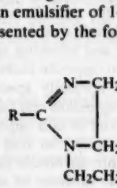
4,315,784

WATER-IN-OIL EMULSION EXPLOSIVE COMPOSITION WITH IMIDAZOLINE DERIVATIVE EMULSIFIER

Katsuhide Hattori; Yoshiaki Fukatsu, and Masao Takahashi, all of Aichi, Japan, assignors to Nippon Oil and Fats Company, Limited, Tokyo, Japan

Filed Nov. 27, 1979, Ser. No. 97,677
Claims priority, application Japan, Nov. 30, 1978, 53-148438
Int. Cl.³ C06B *45/00*
U.S. Cl. 149—2 **7 Claims**

1. A water-in-oil emulsion explosive composition consisting of (a) ammonium nitrate or a mixture of ammonium nitrate with at least one other inorganic oxidizer salt, (b) water, (c) an oil and/or wax, (d) an emulsifier of 1-hydroxyethyl-2-imidazoline derivative represented by the following general formula



wherein R represents an alkyl or alkenyl group having 10-26 carbon atoms, and (e) at least one of bubbles generated from a chemical foaming agent and hollow microspheres.

4,315,785

PROPELLANT CHARGE WITH REDUCED MUZZLE SMOKE AND FLASH CHARACTERISTICS

Bruce W. Brodman, Stroudsburg, Pa.; Michael P. Devine, Sparta, N.J., and Stuart Schwartz, Indianapolis, Ind., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 9, 1980, Ser. No. 138,946
Int. Cl.³ C06B *45/10, 45/00*
U.S. Cl. 149—19.8 **12 Claims**

1. A weapon propellant composition comprising a double based extruded propellant having homogeneously incorporated therein a microencapsulated organic coolant additive having thermal characteristics such that the microencapsulated coolant will survive the propellant flame zone intact and decompose down barrel to cool gases exiting the barrel and thus eliminate secondary muzzle flash while not adversely affecting propellant burning rates.

4,315,786

SOLID PROPELLANT HYDROGEN GENERATOR

William D. English, Orange, and William M. Chew, Yorba Linda, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Jun. 24, 1980, Ser. No. 162,551
Int. Cl.³ C06B *43/00*
U.S. Cl. 149—22 **11 Claims**

1. A solid composition capable of producing hydrogen or deuterium which comprises, in combination, at least one borane reactant containing bound hydrogen or deuterium and a metallic reactant comprised of at least two particulate metals capable of entering into an exothermic reaction to form an intermetallic compound, said metallic reactant being present in a quantity sufficient to initiate and sustain, on reaction to form the intermetallic compound, simultaneous decomposition of said borane reactant to yield hydrogen or deuterium.

4,315,787

WATER-IN-OIL EMULSION EXPLOSIVE COMPOSITION

Katsuhide Hattori; Yoshiaki Fukatsu, and Masao Takahashi, all of Chita, Japan, assignors to Nippon Oil and Fats Co. Ltd., Tokyo, Japan

Filed Mar. 31, 1980, Ser. No. 135,231
Claims priority, application Japan, Apr. 9, 1979, 54/42005
Int. Cl.³ C06B *45/00*
U.S. Cl. 149—2 **7 Claims**

1. A water-in-oil emulsion explosive composition consisting essentially of (a) ammonium nitrate or a mixture of ammonium nitrate and at least one inorganic oxidizer salt, (b) water, (c) at least one member of the group consisting of oil and wax, (d) at least one emulsifier of the group consisting of potassium octadecylsulfonate and sodium N-methyl-N-alkyl(beef tallow)-taurate, (e) at least one of the group consisting of bubbles generated from a chemical foaming agent and hollow microspheres.

4,315,788

METHOD OF PRODUCING ENDLESS DRIVE BELTS

Hans Menell, Hanover, Fed. Rep. of Germany, assignor to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Dec. 11, 1979, Ser. No. 102,385
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1978, 2856622
Int. Cl.³ B29H *7/22*; F16G *1/28*
U.S. Cl. 156—85 **1 Claim**

1. A method of producing a plurality of endless rubber drive

belts configured as V-belts or groove belts wherein each belt has continuous longitudinal ribs extending only around the inner periphery thereof and longitudinally extending reinforcing strands of synthetic polymers extending therein, said method employing a winding drum for initially building up a raw belt structure and an external mold for curing the built-up raw belt structure, said external mold having a large inner diameter substantially equal to the finished belt diameter and a smaller inner diameter, said method comprising the steps of:

constructing a raw belt structure, which is subsequently separated into the plurality of belts, said raw belt structure having an outer diameter greater than the small inner diameter of the external mold, said raw belt structure being constructed by building up the raw belt structure on the drum in reverse layer sequence from the outside toward the inside;

removing the raw belt structure from the drum;

heating the raw belt structure to reduce the diameter of the raw belt structure by shrinking the raw belt structure and the reinforcing strands therein until the outer diameter of the raw belt structure substantially corresponds to the smaller inner diameter of the external mold;

placing the raw belt structure in the external mold;

expanding the raw belt structure within the external mold to an outside diameter corresponding to the large inner diameter which is essentially the original outer diameter of the raw belt structure;

vulcaning the raw belt structure within the external mold to produce a vulcanized belt structure;

cooling the vulcanized belt structure to fix the belt dimensions;

stripping the vulcanized belt structure from the mold;

dividing the vulcanized belt structure into a plurality of separate belts, and

turning the belts right-side-in from the inside-out configuration for subsequent use.

4,315,789

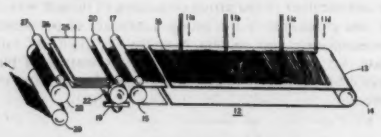
METHOD OF TRANSFERRING MAT FROM A FORMING SURFACE STATION TO A BONDING STATION

Richard R. Tongel, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 13, 1980, Ser. No. 159,087

Int. Cl.³ B65H *17/20*

U.S. Cl. 156—181 **4 Claims**



1. A method of transferring unbonded continuous strand mat from a moving mat forming surface to a bonding station comprising feeding the mat to the end of the moving forming surface, passing the mat from the forming surface to a rotating feed roller positioned in front of a bonding station, providing an endless belt over the surface of said feed roller, said belt hanging loosely from the roller surface, exerting sufficient pressure on the roller surface through the belt to cause the belt to rotate with the roller and moving the mat across the belt and associated roller to the bonding station.

4,315,790

DECORATION OF FLEXIBLE SUBSTRATES

Ian D. Rattee, Leeds, and Edward J. Lewis, Hipperholme, Nr. Halifax, both of England, assignors to Decor Innovations Limited, London, England

Filed Mar. 7, 1980, Ser. No. 128,086

Claims priority, application United Kingdom, Mar. 7, 1979, 08103/79

Int. Cl.³ B32B *3/18*; B41M *3/12*; B44C *1/16*

U.S. Cl. 156—230 **10 Claims**

1. A decoration material comprising a flexible support having thereon a transferable layer which under the influence of heat and pressure is capable of being transferred from the support to the material to be decorated and which comprises a dye or pigment, a film-forming polymer, a crosslinking agent capable on curing of rendering the film-forming polymer insoluble and a thermally activatable catalyst for promoting the crosslinking reaction, the catalyst comprising

(a) the salt of one or more acid groups having a pKa in aqueous solution at 20° C. of at most 3.50 with an organic amine which is volatile or unstable at the temperature of the crosslinking reaction, has a pKa greater than 9.4, and a molecular weight greater than 60, and

(b) the salt of one or more acid groups having a pKa in aqueous solution at 20° C. of 3.75 or more with an organic amine as defined under (a).

4,315,791

METHOD AND APPARATUS FOR PERFORMING HOT AIR WELDING OF THERMOPLASTIC RESIN PARTS

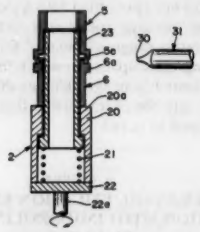
Masami Ishii, Toyota; Nobuharu Kato, Nagoya, and Mikio Hota, Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 31, 1980, Ser. No. 136,050

Claims priority, application Japan, Apr. 19, 1979, 54-48386

Int. Cl.³ B32B *31/00, 31/12*; B65C *19/00*

U.S. Cl. 156—304.2 **3 Claims**



1. An apparatus for welding a pair of thermoplastic resin parts along their peripheral surfaces comprising means for holding said parts with their peripheral surfaces opposed to each other, said parts holding means including a rotatable cylinder provided with an end face for supporting one of said parts, and a guide member having a portion projecting from said end face of said cylinder and axially movable with respect to said cylinder, said guide member having an end face on said projecting portion for supporting the other of said parts, spring means disposed between the cylinder and the guide member for normally biasing said guide member end face in a direction away from said cylinder and allowing said guide member to move in another direction opposite thereto, said parts having their peripheral surfaces normally spaced from each other under the bias of said spring means and being engageable when said guide member is moved in said opposite direction, means for rotating the holding means so that the parts supported thereon are also rotated, hot air nozzle means for blowing hot air toward the peripheral surfaces of said parts when said surfaces are spaced from each other, said nozzle means being movable between an operative position where hot air is di-

rected towards said peripheral surfaces of said parts to be welded, and an inoperative position where the nozzle is directed away from the peripheral surfaces of said parts, and means for forcing said parts toward each other against the biasing force of said spring means so that said peripheral surfaces of said parts are brought into integral contact with each other.

4,315,792

METHOD OF PRODUCING A BOND BETWEEN TWO SURFACES

Hugo Böttcher, Hanover, Fed. Rep. of Germany, assignor to J. H. Benecke GmbH, Hanover, Fed. Rep. of Germany

Filed May 3, 1979, Ser. No. 35,577

Claims priority, application Fed. Rep. of Germany, May 5, 1978, 2819576

Int. Cl.³ C09J *5/00, 7/00*

U.S. Cl. 156—306.6 **6 Claims**

1. A method of bonding a surface formed at least partially of polypropylene to a surface formed of a dissimilar plastic material which does not readily bond to polypropylene; said method comprising adhesively laminating a polypropylene fiber textile web to said dissimilar plastic material surface with an adhesive which has good adhesion to said dissimilar plastic material and which penetrates the polypropylene fiber web and encloses some of the polypropylene fibers to firmly anchor the textile web to the dissimilar plastic material; and thereafter heating the laminated fiber web and the polypropylene surface to a temperature above the plasticizing temperature of the polypropylene surface and pressing the laminated polypropylene fiber web in contact with the polypropylene surface to bond the laminated fiber web and dissimilar plastic material to the polypropylene surface.

4,315,793

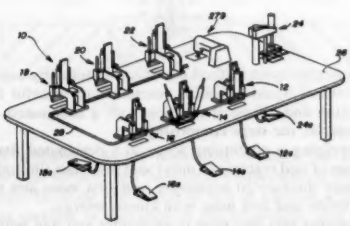
APPARATUS FOR IMPLANTING POCKETS

Joseph W. A. Off, Irving, and Judson H. Early, Dallas, both of Tex., assignors to Haggar Company, Dallas, Tex.

Continuation of Ser. No. 16,404, Mar. 1, 1979, abandoned. This application Aug. 7, 1980, Ser. No. 175,936

Int. Cl.³ B32B *31/00*

U.S. Cl. 156—443 **15 Claims**



1. Apparatus for integrating a pocket bag into a garment panel to form a pocket, which comprises:

means for releasably holding the pocket bag and garment panel in predetermined relationship for transport together;

means for adhesively interconnecting the pocket bag and the garment panel;

means for forming a slit through the pocket bag and garment panel at the adhesive connection therebetween;

means for folding back and securing the edges of the slit to form a pocket slot through the pocket bag and garment panel; and

means for securing a peripheral portion of the pocket bag to close the pocket.

4,315,794

DEVICE FOR THE QUICK SPLICING OF PAPER WEBS

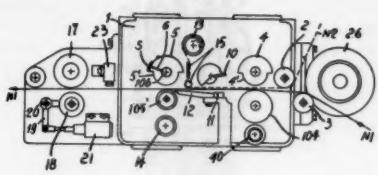
Angelo Palmieri, Zola Predosa, Italy, assignor to Carle & Montanari S.p.A, Bologna, Italy

Filed Apr. 3, 1980, Ser. No. 136,751

Claims priority, application Italy, Apr. 3, 1979, 12536 A/79

Int. Cl.³ B31F *5/06*

U.S. Cl. 156—504 **6 Claims**



1. A device for the quick splicing of two webs, for use with a wrapping machine, comprising conveying means including a pair of rollers (**4, 104**) both driven at the same peripheral speed for feeding both webs in overlapping relationship at the same speed, with the webs being pressed between said rollers; severing means for simultaneously severing both overlapping and running webs, said severing means comprising a blade (**10**) carried on rotary supporting means and a counterblade (**11**); discarding means (**13,14**) arranged downstream of the said severing means, for removing a severed portion of one of the webs; splicing means (**5**) for applying adhesive tape onto the cut trailing end of one web and the cut leading end of the other web; drawing means (**17, 18**) comprising a pair of cooperating rollers at least one of which is a driving roller, for drawing the web being spliced at substantially the same speed as the conveying means, with the web being pressed between said rollers, a substantially trough shaped suction groove positioned on the rotary supporting means adjacent to and after the blade (**10**) in the direction of rotation, said suction groove (**52**) extending longitudinally along substantially the whole width of the blade and having a depth capable of curling the cut leading end of one web for positive detaching action of the overlapping webs; and means for selectively connecting said suction groove (**52**) with a source of suction to effect web detaching action.

4,315,795

HIGH SPEED DECORATION

Robert M. Jodrey, Westboro, and Kenneth Young, Groton, both of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

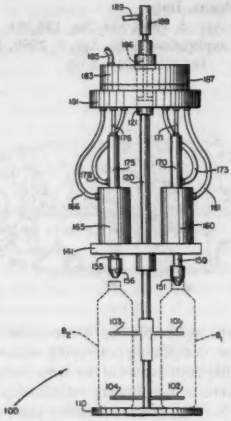
Division of Ser. No. 915,025, Jun. 12, 1978, Pat. No. 4,253,904. This application Aug. 7, 1980, Ser. No. 176,152

Int. Cl.³ B44C *31/00;* **B65D** *5/00;* **B32B** *31/00*

U.S. Cl. 156—542 **2 Claims**

1. An improved label carrier strip transport for a heat transfer labelling machine of the type in which the label carrier strip is fed at a basic speed to a first shuttle roll which is mounted on one end of a shuttle slide, past a labelling site, to a second shuttle roll at the other end of the shuttle slide, and thence to a takeup point, and in which the basic speed of the label carrier strip is modified at the labelling site by reciprocating the shuttle slide using a periodically rotating cam which is mechanically coupled to the shuttle slide, wherein the improvement comprises the use of a conjugate cam for said periodically rotating cam, said conjugate cam acting to increase the basic

speed of the label carrier strip during the greater part of the cam rotation period, and to decrease the basic speed of the



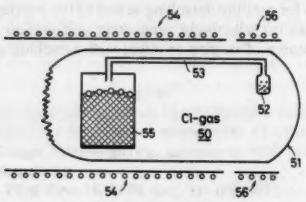
label carrier strip during the balance of the cam rotation period.

4,315,796

CRYSTAL GROWTH OF COMPOUND SEMICONDUCTOR MIXED CRYSTALS UNDER CONTROLLED VAPOR PRESSURE

Jun-ichi Nishizawa, Sendai, Japan, assignor to Zaidan Hojin Handotai Kenkyu Shinkokai, Sendai, Japan

Continuation-in-part of Ser. No. 806,836, Jun. 15, 1977, abandoned. This application May 31, 1979, Ser. No. 44,214
Claims priority, application Japan, Mar. 10, 1978, 51-101417
Int. Cl.³ C30B *25/02*
U.S. Cl. 156—614 **23 Claims**



1. In a solution growth method for producing compound semiconductor mixed crystals in one or more crucibles each containing a solution of a source material and a solid source material which is disposed in contact with the solution which solution is thermally controlled to establish a temperature difference between a high temperature portion and a low temperature portion of said solution in each said crucible such that said high and low temperature are respectively maintained constant, and in which a mixed crystal is deposited on an appropriate substrate disposed at said low temperature portion in each crucible, the improvement comprising:

(a) positioning said substrate on a slider which can be slidably brought into contact with said solution at said low temperature portion;

(b) positioning said crucibles in line and supplying at least two of said crucibles from the same pressure source;

(c) applying to said solution a controlled vapor pressure of each of at least two volatile elements having a relatively higher vapor pressure from a pressure source provided separately from the crucible and a furnace for the crucible through a thin tube, wherein the vapor pressures of said at least two volatile elements are independently controlled through their respective thin tubes;

(d) supplying each such crucible with the volatile element at a pressure optimum for conducting successive epitaxial growth under a controlled vapor pressure; and

(e) growing an epitaxial layer on said substrate positioned on said slider at said low temperature portion, while retaining said source material on said solution throughout the growth; wherein the pressure applied to said solution is selected for each such volatile element such that said application of vapor pressure enables growth of a mixed crystal having the same composition as said source material, thereby establishing a substantially steady state of the solution during growth and thereby providing an optimum performance of a predetermined physical property of said mixed crystal.

4,315,797

CHEMICAL PIPE CUTTER WITH EXPONENTIAL SPACING BETWEEN REACTANT STAGES

James M. Peppers, Houston, Tex., assignor to Gearhart Industries, Inc., Fort Worth, Tex.

Filed Jun. 2, 1980, Ser. No. 155,542
Int. Cl.³ C23F *1/02*; E21B *29/02*
U.S. Cl. 156—654 **6 Claims**

1. In an improved method of cutting material by expelling a jet stream of liquid chemical reactant into forceful flowing connection and chemical reaction with a designated area of said material, the steps comprising:

(a) applying a continuing force to a designated first stage mass of said reactant to move said first mass through a first linear distance to accelerate said first mass and thereby provide said first mass with kinetic energy;

(b) causing said first mass to encounter and join with a second stage mass of chemical reactant to form an aggregate mass with said aggregate mass then moving at a velocity attained by the kinetic energy of said first mass as applied to said aggregate mass and at a rate of acceleration generated by the continued application of said force to said aggregate mass through a second linear distance less than said first linear distance;

(c) causing said aggregate mass to encounter and join with a third state mass of chemical reactant to form an enlarged aggregate mass with said enlarged aggregate mass then moving at a velocity attained by the kinetic energy of said aggregate mass as applied to said enlarged aggregate and at a rate of acceleration generated by the continued application of said force to said enlarged aggregate mass;

(d) passing said enlarged aggregate mass through a medium adapted to heat the reactant of said enlarged aggregate mass to a substantially elevated temperature; and

(e) directing the flow of said enlarged aggregate mass as heated as a jet stream into flowing connection with said material.

4,315,798

DECAY RESISTANT SHEET MATERIAL WITH RETAINED FLEXIBILITY

Warren J. Bodendorf, Montgomery, Mass., assignor to Texon Inc., South Hadley, Mass.

Filed Aug. 13, 1980, Ser. No. 177,778
Int. Cl.³ D21H *5/22*
U.S. Cl. 162—161 **5 Claims**

1. In a synthetic sheet material resistant to decay by fungus and other microbial organisms and which includes a uniform distribution of fibers and metal-quinolinolate within a binder; the improvement comprising said binder being an acrylic elastomeric binder in a sufficient amount to retard the flexural degradation of said sheet material upon aging.

5. A process for manufacturing a synthetic fibrous sheet material which is resistant to decay according to a papermaking technique including:

providing a furnish of a fibrous slurry, metal-quinolinolate and a cationic polymer;

forming said furnish into a web;

saturating said web with an acrylic elastomeric binder; and

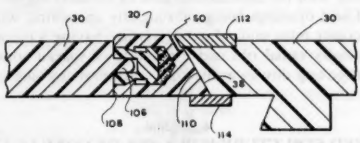
drying said web to form a fibrous sheet.

4,315,799

ADJUSTABLE DECKLE

Mitchell C. Turek, Suffield, Conn., and H. Gary Garab, Glens Falls, N.Y., assignors to Albany International Corp., Menands, N.Y.

Filed Feb. 15, 1980, Ser. No. 122,234
Int. Cl.³ D21F *1/48*
U.S. Cl. 162—353 **12 Claims**



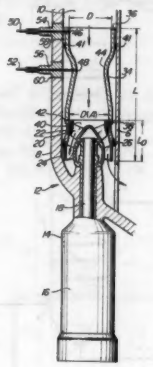
1. An adjustable deckle positioned between the ends of adjacent wear surfaces of a vacuum of a papermaking machine, said deckle facilitate prevention of loss of vacuum applied to the wear surfaces in operation of the machinery, said deckle comprising; an elongated member insertable between two adjacent wear surfaces and having a pair of opposing elongated front and rear faces, a pair of elongated top and bottom faces and a pair of end faces, the front face having a configuration conforming with the configuration of an adjacent edge of one wear surface, the rear face having a recess therein, a shiftable element mounted in the recess by engagement between surfaces of the element and surfaces of the member and having a portion exposed through an opening in the rear face of the elongated member, and means on the exposed portion of the element to mate with an adjacent edge of the other wear surface, and resilient means in said recess permitting shifting of the element within the recess to accommodate for dimensional differences between the two wear surfaces.

4,315,800

NUCLEAR REACTOR

Yuichiro Yoshimoto, and Hiroshi Kodama, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 22, 1980, Ser. No. 142,817
Claims priority, application Japan, Apr. 28, 1979, 54-52756
Int. Cl.³ G21C *19/28*
U.S. Cl. 376—246 **10 Claims**



1. In a nuclear reactor comprising a reactor core, a shroud enclosing said reactor core, a pressure vessel surrounding said shroud and defining a vertical annular space between the vessel and the shroud, and a plurality of internal circulation pumps disposed in a lower portion of said vertical annular space for forcing a coolant in said vertical annular space to flow into below said reactor core so that the coolant flows through the reactor core in forced circulation, the improvement comprising means for vertically guiding over a predetermined distance a flow of the coolant being sucked into each said internal circulation pump to increase the effective inertia of the flow of the coolant, to thereby enhance the stability of the flow conditions of the coolant flowing through the reactor core, said guide means including a tubular guide member in the form of a venturi tube for each said internal circulation pump, and further comprising flow measurement means associated with said venturi tube for measuring the flow rate of the coolant flowing through said reactor core.

4,315,801

APPARATUS FOR THE SOLVENT EXTRACTION OF AROMATIC HYDROCARBONS FROM A HYDROCARBON MIXTURE

George R. Winter, III, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Oct. 17, 1980, Ser. No. 198,036
The portion of the term of this patent subsequent to Oct. 6, 1998, has been disclaimed.
Int. Cl.³ B01D *11/04*; C10C *3/08*
U.S. Cl. 196—14.52 **4 Claims**

1. A multiple stage extractor column for countercurrent contact of an upwardly moving hydrocarbon phase and a downwardly moving solvent phase which comprises:

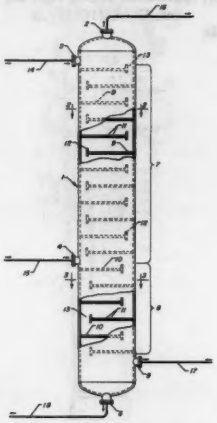
(a) an enclosed vertically elongated shell having an overhead raffinate outlet means, an upper lean solvent inlet means, an intermediate hydrocarbon feedstock inlet means, a lower hydrocarbon reflux inlet means, and a bottom rich solvent outlet means;

(b) a first plurality of vertically spaced apart extraction trays traversing said shell in a horizontal plane and situated above said intermediate inlet means;

(c) each of said plurality of trays having an upcomer means associated therewith of a substantially uniform, prese-

lected cross-sectional area, and a number of perforations uniformly distributed across the contacting area thereof;

(d) a second plurality of vertically spaced apart extraction trays traversing said shell in a horizontal plane and situated below said intermediate inlet means;



(e) each of said second plurality of trays having an upcomer means associated therewith of a substantially uniform cross-sectional area, and a number of perforations uniformly distributed across the contacting area thereof; and,

(f) the upcomer means associated with said second plurality of trays having a greater cross-sectional area than the upcomer means associated with said first plurality of trays.

4,315,802

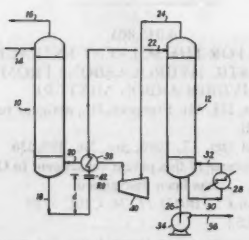
PROCESS AND APPARATUS FOR FRACTIONATING CLOSE BOILING COMPONENTS OF A MULTI-COMPONENT SYSTEM

Utah Tsao, Jersey City, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Filed May 12, 1980, Ser. No. 148,977

Int. Cl.³ B01D *3/14*

U.S. Cl. 202—158 **4 Claims**



1. In an apparatus for fractionating close-boiling components of a multi-component system in a plurality of fractionation columns wherein there are at least two of said columns in series, said plurality of columns being of like operating pressures, wherein a conduit for liquid is provided for passing a liquid bottoms from a penultimate fractionation column to an upper portion of the last fractionation column of said series and wherein a conduit for vapor is provided for withdrawing a vapor stream from the upper portion of said last fractionation column and wherein a higher boiling component of said multi-component system is withdrawn as a liquid from said last fractionation column and wherein a lower boiling component of said multi-component system is withdrawn as a vapor, an improved apparatus which comprises: means for eliminating the requirement for a pump, comprising a first conduit having an orifice therein, for feeding from the bottom of said first column; aid orifice being sized, and spaced sufficiently below said bottom to provide self venting; and means for eliminating the requirement of a reboiler in said first column, comprising a second conduit having a compressor therein for feeding from the top of said last column to the bottom of said first column.

4,315,803

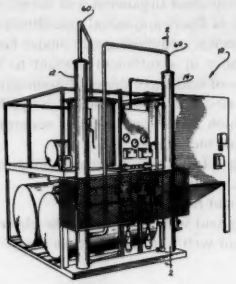
BAFFLE FOR ALCOHOL STILLS

Robert E. Strang, Sr., North Libert, Ind., assignor to Injection Plastics & Manufacturing Co., LaPaz, Ind.

Continuation-in-part of Ser. No. 172,752, Jul. 28, 1980, Pat. No. 4,273,618. This application Jan. 14, 1981, Ser. No. 225,022

Int. Cl.³ B01D *3/02*

U.S. Cl. 202—158 **9 Claims**



1. A baffle adapted to be stacked in spaced relation in a vertical tube of an alcohol still, said baffle comprising a body having an upper cooking surface and lower refracting surface and a plurality of concentric series of spaced openings therethrough, a collection cup extending upwardly from said cooking surface, an open-ended downcomer tube carried by said body and projecting above said cooking surface and below said refracting surface, said collection cup and downcomer tube of adjacent baffles being arranged oppositely for alignment of each cup with the downcomer tube of the next higher baffle, one of said openings being substantially concentric with said downcomer tube, said refracting surface having a plurality of substantially radial ribs and a plurality of spaced concentric ribs projecting downwardly from said refracting surface.

4,315,804

SHED STRUCTURE FOR A SET OF COKE OVENS

Kurt Renner, Bochum-Stiepel; Ernst Langer, Oer-Erkenschwick, and Werner Eisenhut, Essen, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Apr. 24, 1980, Ser. No. 143,305

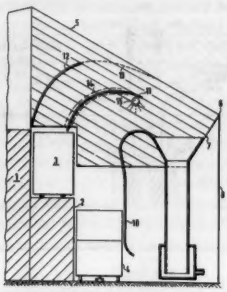
Claims priority, application Fed. Rep. of Germany, Jan. 3, 1980, 3000064

Int. Cl.³ C10B *33/00, 41/02*

U.S. Cl. 202—263 **12 Claims**

1. A hall structure for discharging polluting substances such as dust particles, gases and vapors released during the discharge of coke from a set of coke ovens and escaping from the oven doors, the set including a door region for a coke guide transfer carriage, said transfer carriage having an inner top edge facing said ovens and an outer top edge remote from said ovens, a quenching carriage region communicating with the door region and a washer region arranged behind and being spaced apart from the quenching carriage region as viewed from the door region, said structure comprising supporting

means adjoining said washer region, a roof resting on the supporting means and terminating at said ovens above the door region to define a roof space above the respective regions, an upright central partition arranged between said quenching carriage region and said washer region and extending approximately up to the height of said ovens, the top portion of said partition being bent by about 180° to form a guiding surface over a substantially semicircular cross-section communicating with the inlet of said washer region, a curved upper guiding



member extending in said roof space parallel with said top portion of the partition and being connected at one end to the top edge of said ovens in said door region in the range of said inner top edge of said transfer carriage and at the other end terminating in said washer region above said partition, and an intermediate guiding member extending in said roof space, one end of said intermediate guiding member starting in the range of the outer top edge of said transfer carriage in the door region and the other end terminating in said washer region above said partition.

4,315,805

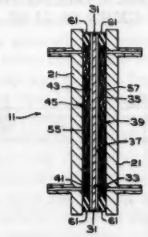
SOLID POLYMER ELECTROLYTE CHLOR-ALKALI PROCESS

William B. Darlington, Portland, and Donald W. DuBois, Corpus Christi, both of Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 76,898, Sep. 19, 1979. This application Feb. 11, 1980, Ser. No. 120,217

Int. Cl.³ C25F *1/34, 1/04*

U.S. Cl. 204—98 **7 Claims**



1. In a method of electrolyzing alkali metal chloride brine to form chlorine and alkali metal hydroxide, which method comprises feeding the brine to an electrolytic cell having an anode comprising anodic electrocatalyst separated from a cathode comprising cathodic electrocatalyst by a permionic membrane, said anodic electrocatalyst and said cathodic electrocatalyst both contacting said permionic membrane, and passing an electrical current from said anodic electrocatalyst to said cathodic electrocatalyst whereby to evolve chlorine at the anode and hydrogen and alkali metal hydroxide at the cathode, the improvement wherein said anode comprises a pervious substrate having anodic electrocatalyst bonded thereto and bearing upon the permionic membrane, said cathodic electrocatalyst is bonded to and embedded in the permionic membrane, and the permionic membrane is a perfluorocarbon having functional groups chosen from the group consisting of —COOH, —CN_2COF, —COCl, —$COOR_1$, —COOM, and $CONR_2R_3$, where R_1 is a C_1–C_{10} alkyl group, R_2 and R_3 are chosen from the group consisting of hydrogen and C_1–C_{10} alkyl groups and M is chosen from the group consisting of hydrogen, Na, and K.

4,315,806

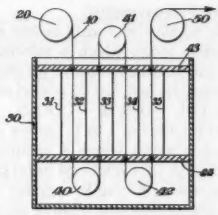
INTERMITTENT AC ETCHING OF ALUMINUM FOIL

Mulk A. Arora, Williamston, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Sep. 19, 1980, Ser. No. 188,637

Int. Cl.³ C25F *3/04*

U.S. Cl. 204—129.4 **6 Claims**



1. A process for electrolytic etching of aluminum capacitor foil comprising passing said foil through an electrolyte bath between two electrodes in an insulated frame, continuously supplying AC current to said electrodes, subjecting said foil to AC etching for a period of time t_1 during which said foil is between said electrodes and during which all current passed is utilized for etching followed by a rest period of time t_2 of up to 10 seconds during which said foil is outside said frame and outside said electrodes and during which no electrochemical etching takes place, subjecting said foil to AC etching for another period of time t_1 followed by another nonetching period t_2, and repeating said etching and nonetching periods until the foil has been etched to the desired level.

4,315,807

SENSITIZERS FOR PHOTOPOLYMERIZATION

Louis Felder, Basel; Rudolf Kirchmayr, Aesch, and Rinaldo Hüsler, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

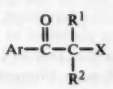
Division of Ser. No. 970,016, Dec. 18, 1978. This application Dec. 28, 1979, Ser. No. 108,276

Claims priority, application Switzerland, Dec. 22, 1977, 15884/77; Mar. 8, 1978, 2518/78; Sep. 18, 1978, 9723/78

Int. Cl.³ C08F *2/50;* C08J *3/28*

U.S. Cl. 204—159.18 **10 Claims**

1. In a method for the photopolymerisation of unsaturated compounds or for the photochemical crosslinking of polyolefins employing a sensitizer, the improvement according to which the sensitizer is a compound of the formula



wherein

Ar is a tetrahydronaphthyl or indanyl radical,

X represents one of the groups —NR^4R^5, —OR^6, O—

$Si(R^7)(R^8)_2$, hydroxymethoxy, (C_1–C_4alkoxy)methoxy, (C_2–C_8acyloxy)methoxy or together with R^1 represents —OCH(C_1–C_8alkyl)—O(CH_2)$_{1-2}$—, —OCH(C_6–C_{14}aryl)—O—, —OCH(C_1–C_8alkyl)— or —OCH(C_6–C_{14}aryl)—,

R^1, if X is —OR^6, represents (a) C_1–C_8 alkyl, (b) C_1–C_8 alkyl substituted by C_2–C_8 acyloxy, —COO—(C_1–C_4)alkyl or —CN, (c) C_5–C_6 cycloalkyl or (d) C_7–C_9phenylalkyl, and, in all other cases, represents (a) alkyl of 1 to 8 carbon atoms, (b) alkyl of 1 to 8 carbon atoms substituted by OH, C_1–C_4alkoxy, C_2–C_8acyloxy, —COO—(C_1–C_4)alkyl or —CN, (c) cycloalkyl of 5 to 6 carbon atoms or (d) phenylalkyl of 7 to 9 carbon atoms,

R^2 has one of the meanings assigned to R^1 or represents allyl, methallyl, 2-carbamoylethyl, 2-(N-C_1–C_4alkylcarbamoyl)ethyl, 2-(N,N-di-C_1–C_4alkylcarbamoyl)ethyl, 2-(2-pyridyl)ethyl, 2-(2-oxo-1-pyrrolidinyl)ethyl or 2-(di-O-C-$_1$–C_4alkylphosphono)ethyl, or R^1 and R^2 together represent alkylene of 4 to 6 carbon atoms, oxaalkylene of 3 to 4 carbons or azaalkylene of 3 to 4 carbon atoms, or R^1 and R^2 are both hydroxymethyl,

R^4 represents (a) alkyl of 1 to 12 carbon atoms, (b) alkyl of 2 to 4 carbon atoms which is substituted by —OH or —Oalk, (c) allyl, (d) cyclohexyl, (e) phenylalkyl of 7 to 9 carbon atoms, (f) phenyl or (g) phenyl which is substituted by Cl, alk, OH, —Oalk or —COOalk,

R^5 represents (a) alkyl of 1 to 12 carbon atoms, (b) alkyl of 2 to 4 carbon atoms which is substituted by —OH or —Oalk, (c) allyl, (d) cyclohexyl or (e) phenylalkyl of 7 to 9 carbon atoms, or R^4 and R^5 together represent alkylene of 4 to 5 carbon atoms which can be interrupted by —O—, —NH— or —Nalk—, or, together with R^2 represents alkylene or phenylalkylene of 1 to 9 carbon atoms, oxaalkylene of 2 to 3 carbon atoms or azaalkylene of 2 to 3 carbon atoms,

R^6 represents (a) hydrogen, (b) alkyl of 1 to 12 carbon atoms, (c) alkyl of 2 to 4 carbon atoms which is substituted by —OH or —Oalk, (d) allyl, (e) cyclohexyl, (f) phenylalkyl of 7 to 9 carbon atoms, (g) phenyl or (h) phenyl which is substituted by Cl or alk,

R^7 and R^8 are the same or different and represent alkyl of 1 to 4 carbon atoms or phenyl.

4,315,808

METHOD FOR MODIFYING SURFACE PROPERTIES OF SHAPED ARTICLES OF VINYL CHLORIDE BASED RESIN WITH LOW TEMPERATURE PLASMA

Kiyoshi Imada, Omiya; Susumu Ueno, and Hirokazu Nomura, both of Ibaraki, all of Japan, assignors to Shin-Etsu Chemical Co. Ltd., Tokyo, Japan

Filed May 13, 1980, Ser. No. 149,417
Claims priority, application Japan, May 21, 1979, 54-62349
Int. Cl.³ C08F *2/46*
U.S. Cl. 204—169 **4 Claims**

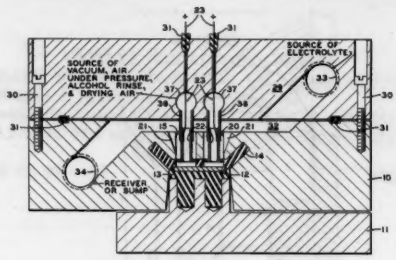
1. A method for modifying surface properties of a shaped article composed of a vinyl chloride-based resin composition and having a plasticizer therein which comprises subjecting the surface of the article to intermittent exposure to an atmosphere of low temperature plasma of an inorganic gas under a pressure in the range from 0.01 Torr to 1.0 Torr for a length of the treatment time which is an alternate sequence of at least five alternating exposure and repose times wherein the length of each of the exposure times is in the range from 0.001 second to 1000 seconds and the length of each of the repose times is in the range from 0.001 second to 1000 seconds.

4,315,809

CLUSTER CORE ASSEMBLY FOR ELECTROPLATING RADIOACTIVE SOURCES FOR AN IONIZATION SMOKE DETECTOR

James G. Phillips, Albuquerque, N. Mex., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 23, 1979, Ser. No. 32,042
Int. Cl.³ C25D *17/00*
U.S. Cl. 204—224 R **7 Claims**



1. In apparatus for electroplating a spot of radioactive material on a substrate comprising:

a member having at least one cavity which is open on one end,

an electrode mounted in said cavity and positioned to have one end in the vicinity of said one end of said cavity,

means for holding a substrate against said one end of said cavity and spaced a distance of approximately 50 to 100 thousandth of an inch from said electrode,

a source of electrolyte connected to said cavity to fill said cavity with electrolyte,

a source of electrical power, providing a constant current, and

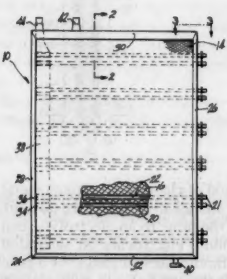
circuit means connecting one side of said source of power to said electrode and another side of said substrate whereby upon the flow of current through said electrolyte to said substrate a deposit of material forms on said substrate.

4,315,810

ELECTRODE FOR MONOPOLAR FILTER PRESS CELLS

Morton S. Kircher, Clearwater, Fla., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 128,684, Mar. 10, 1980. This application Jun. 9, 1980, Ser. No. 157,902
Int. Cl.³ C25B *9/04, 11/03, 11/00*
U.S. Cl. 204—257 **11 Claims**



1. An electrode for a monopolar filter press cell which comprises:

(a) a first foraminous surface and a second foraminous surface positioned in parallel and spaced apart;

(b) a frame having two side members, a top member and a bottom member attached to said first foraminous surface and said second foraminous surface;

(c) a chamber formed between said first foraminous surface and said secon foraminous surface and bounded by said frame;

(d) at least one pair of conductor rods entering said chamber through openings in one of said side members of said frame, one of said pair of conductor rods being attached only to said first foraminous surface and the other of said pair of conductor rods being attached only to said second electrode surface, each conductor rod having a lead portion outside of said chamber suitable for attachment to a current supply means and a support portion inside said chamber for said attachment to said electrode surface; said openings being substantially centered in said side frame member, and said support portion of each of said conductor rods being bent toward said electrode surface to which said conductor rod is attached; and

(e) inlets and outlets in said frame for introducing fluids into and removing electrolysis products from said chamber.

4,315,811

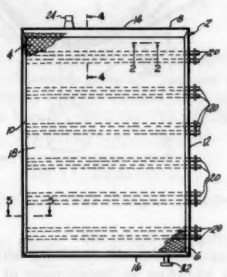
REINFORCED METAL CHANNELS FOR CELL FRAME

Morton S. Kircher, Clearwater, Fla., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 128,684, Mar. 10, 1980. This application Jun. 6, 1980, Ser. No. 157,917

Int. Cl.³ C25B *9/02, 11/00*

U.S. Cl. 204—279 **13 Claims**



1. A frame component for a frame of an electrode for use in a monopolar filter press membrane type of electrolytic cell, the electrode being in a generally vertically upright position during operation, said frame component comprising:

(a) a first planar side wall having a first outer edge and a first inner edge, said outer edge being suitable to fasten a first electrode surface thereto, said fastening thereby defining a first predetermined elongate area of attachment;

(b) a second planar side wall parallel to said first wall and having a corresponding first outer edge and a first inner edge, said first outer edge of said second planar side wall being suitable to fasten a second electrode surface thereto, said fastening thereby defining a second predetermined elongate area of attachment;

(c) an outer planar wall attached orthogonally to said first and second planar side walls; and

(d) a multiplicity of spaced rigid reinforcing members horizontally extending between and connected to said first and second planar side walls when the electrode is in the generally vertical upright position, said reinforcing members further being connected to said first and second planar side walls along a plane that does not intersect said first and second predetermined elongate areas of attachment.

4,315,812

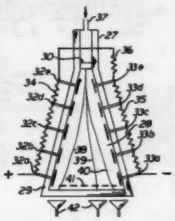
APPARATUS FOR CONTINUOUS ELECTROCHROMATOGRAPHIC SEPARATION

Eskil L. Karlson, 4634 State St., Erie, Pa. 16509

Filed May 28, 1980, Ser. No. 154,065

Int. Cl.³ G01N *27/26, 27/30*

U.S. Cl. 204—299 R **3 Claims**



1. An apparatus for continuous molecular separation within a gas or liquid comprising opposed plates of insulation material defining an elongated flattened passageway with an inlet at one end and an outlet at the other end, a bed of glass beads or chromatographic filter material filling said passageway, a series of a plurality of pairs of electrodes, each pair having electrodes on opposite edges of said passageway for producing an edgewise electric charge across the filter material between said plates for effecting lateral movement of the molecular components relative to a flow of fluid in said passageway towards said outlet, said pairs of electrodes being spaced from each other along the length of the passageway, means for supplying a different voltage to each of said pairs of electrodes, and means for introducing into the inlet fluid having components of different molecular weights, size and/or polarity.

4,315,813

SOLVENT DEWAXING WAXY HYDROCARBON OILS USING DEWAXING AID

Takashi Onodera, Urawa; Kikuji Komine, Tokorozawa; Fumio Ohashi, and Tsutomo Naito, both of Ohi, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 21, 1978, Ser. No. 926,812

Int. Cl.³ C10G *73/04*

U.S. Cl. 208—33 **10 Claims**

1. In a solvent dewaxing process wherein a waxy hydrocarbon oil is mixed with a dewaxing aid and dewaxing solvent and chilled to form a slurry comprising solid particles of wax and mixture of dewaxed oil and solvent and wherein said wax is separated from said slurry, the improvement which comprises using a polymeric dewaxing aid comprising a condensation product of naphthalene and a chlorinated wax, said condensation product having an average molecular weight ranging from about 20,000 to 500,000 and a molecular weight distribution exceeding the range of from about 10,000 to 1,000,000.

4,315,814

HYDROCARBON CONVERSION PROCESS

David S. Shihabi, Pennington, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

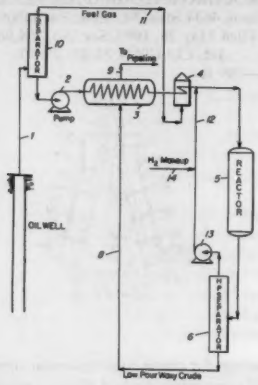
Division of Ser. No. 103,793, Dec. 14, 1979, Pat. No. 4,284,529. This application Jan. 8, 1981, Ser. No. 223,531

Int. Cl.³ C10G *11/05, 47/20*

U.S. Cl. 208—111 **15 Claims**

1. A process for converting a high boiling hydrocarbon charge fraction to liquid products of lower boiling range which comprises contacting said charge fraction with a steamed crystalline zeolite characterized by a silica/alumina ratio greater than 12, a constraint index between about 1 and about 12, and substantially no activity for cracking n-hexane,

said activity having been substantially eliminated by base-exchange of said steamed zeolite with an alkali metal cation,



said contacting being conducted at about 650° to 850° F., and a space velocity of 0.1 to 5.0 LHSV.

4,315,815

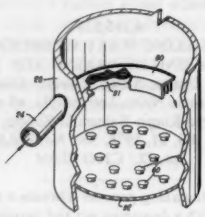
PROCESS FOR SEPARATING BITUMINOUS MATERIALS AND RECOVERING SOLVENT

Junior A. Gearhart, Oklahoma City, Okla., assignor to Kerr-McGee Refining Corporation, Oklahoma City, Okla.

Continuation-in-part of Ser. No. 164,598, Jun. 30, 1980, abandoned. This application Feb. 23, 1981, Ser. No. 237,376

Int. Cl.³ B65D *85/46;* **C10C** *3/00, 3/08*

U.S. Cl. 208—321 **18 Claims**



1. A process comprising:

separating an admixture comprising a fluid-like bituminous material and a solvent in a separation zone into at least a fluid-like light phase comprising a portion of said bituminous material and solvent and a fluid-like heavy phase comprising the remainder of said bituminous material and solvent by maintaining the mixture at an elevated temperature and pressure;

reducing the pressure on said heavy phase to vaporize at least a portion of the solvent present therein and form a mixture of fluid-like bituminous material in association with said vaporized solvent together with undesired fine particles of bituminous material dispersed therein;

introducing said mixture into a steam stripping zone comprising a steam stripper vessel to separate at least a portion of any nonvaporized solvent remaining in association with said fluid-like bituminous material, said mixture being introduced into said stripping zone through an introduction means in a manner such that a centrifugal motion is imparted thereto, said introduction means including a plurality of vanes, the surfaces of which are at least partially wetted by the fluid-like bituminous material of said mixture and which utilize said centrifugal motion to create turbulence in said mixture within said introduction means to cause at least a portion of said fine particle size bituminous material dispersed in said vaporized solvent to impinge on said portion of said surfaces of said vanes on which said fluid-like bituminous material is present and adhere to said fluid-like bituminous material to cause said fine particles of bituminous material to separate from said vaporized solvent; and

recovering said solvent from said steam stripping zone substantially free of any fine particle size bituminous material.

4,315,816

HIGH INTENSITY MAGNETIC FIELD DRUM SEPARATOR

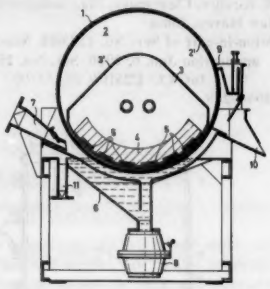
Guenter Ries; Klaus-Peter Jüengst; Siegfried Föerster; Franz Graf, all of Karlsruhe; Wolfgang Lehmann, Leopoldshafen; Karl-Heinz Unkelbach, and Gottfried Düeren, both of Cologne, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Oct. 19, 1977, Ser. No. 843,738

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1976, 2650540

Int. Cl.³ B03C *1/14*

U.S. Cl. 209—223 A **6 Claims**



5. A high intensity magnetic field drum separator, comprising:

a rotatable magnetic drum; and

a magnetic system mounted stationary within said rotatable drum and including an arrangement of superconducting conductors, a coil support of weakly magnetizable iron shaped to match and supported adjacent to the curved inner surface of said drum, and a plurality of superconducting coils formed by said conductors embedded in the surface of said support which faces the inner surface of said drum,

said coils being wound and mounted such that their winding axes extend ra-ially with respect to said drum and said coils being curved in the direction of their transverse axes to conform to the shape of the inner surface of said drum,

said coils being mounted and connected to be energized in the same direction.

4,315,817

VIBRATING SURFACE APPARATUS

Jakhin B. Popper, Kyriat Motzkin, Israel, assignor to Popper Engineering Ltd., Kyriat Motzkin, Israel

Filed Jun. 5, 1978, Ser. No. 912,886

Int. Cl.³ B07B *1/42*

U.S. Cl. 209—315 **6 Claims**

1. Vibratory surface apparatus comprising:

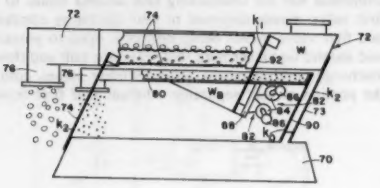
a fixed base member;

vibratory motion producing means vibrating axially along a vibratory axis;

first spring means coupling said vibratory motion producing means to said base member;

a first surface adapted to be vibrated along said vibratory axis;

second spring means drivingly coupling said first surface to said vibratory motion producing means, said second spring means having a finite spring constant along said vibratory axis thereby permitting substantial differential motion between said vibratory motion producing means and said first surface along said vibratory axis; and



third spring means coupling said first surface to said base member; the spring constants of said first, second and third spring means being selected such that substantially no vibrational forces are transmitted to said base member and such that said first, second and third spring means do not produce appreciable damping.

4,315,818

ANTI-POLLUTION EQUIPMENT

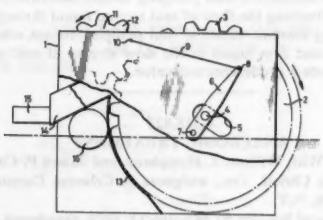
John L. Thomas, Ottershaw, England, assignor to The British Petroleum Company Limited, London, England

Filed May 21, 1980, Ser. No. 152,086

Claims priority, application United Kingdom, May 29, 1979, 18697/79

Int. Cl.³ E02B *15/04*

U.S. Cl. 210—242.3 **5 Claims**



1. A device for removing oil floating on the surface of water which device comprises a frame, two rotatable drums, one of which is larger than the other, each drum having corrugations in the form of gear teeth extending across the surface of the drum, said corrugations being parallel to each other and to the axis of the drum and being adapted to mesh with the corrugations of the other drum, the device also comprising:

(a) means for driving one of the drums;

(b) a collector for recovered oil mounted below the area where the gear teeth of the two drums mesh during rotation thereof; and

(c) at least one float so that in use the device floats with the larger drum partially immersed in water and with the smaller drum and collector clear of the water and with the plane joining the axis of rotation of the drums at an angle between the horizontal and the vertical.

4,315,819

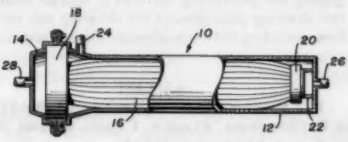
HOLLOW FIBER PERMEATOR APPARATUS

Duane E. King, Wake Forest; Billy J. Harris, Durham; Donald L. MacLean, and Tommy E. Graham, both of Raleigh, all of N.C., assignors to Monsanto Company, St. Louis, Mo.

Filed Jun. 12, 1978, Ser. No. 915,082

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—321.3 **22 Claims**



1. A permeator for separating by the selective permeation of at least one fluid from a fluid mixture containing at least one other component comprising an elongated, fluid impermeable shell having at least one end adapted to receive a tube sheet; a plurality of selectively permeable hollow fibers, said hollow fibers having an exterior surface and a bore and said hollow fibers being generally parallelly positioned within the shell to form an elongated bundle of hollow fibers; at least one tube sheet, said tube sheet being in fluid tight relationship with said shell wherein at least one end of each of said hollow fibers is embedded in a fluid tight relationship in said at least one tube sheet and wherein said bores of said hollow fibers communicate through said tube sheet; at least one fluid ingress port communicating through said shell and at least one longitudinally distant fluid egress port communicating through said shell, said ingress and egress ports being in communication with the exterior surface of the hollow fibers and adapted to provide axial flow of fluid in said shell; and means for longitudinally compacting said bundle of hollow fibers whereby said bundle is sufficiently longitudinally compacted to enhance the efficiency of separation.

4,315,820

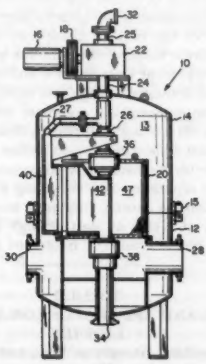
SELF-CLEANING STRAINER

Alexander B. Mann; John B. Kraeling, Jr., and Ronald G. Bukowski, all of Erie, Pa., assignors to Zurn Industries, Inc., Erie, Pa.

Filed Jan. 23, 1980, Ser. No. 114,679

Int. Cl.³ B01D *29/38*

U.S. Cl. 210—408 **17 Claims**



1. In a strainer of the automatic backwashing type including a strainer element having an upstream and downstream side and a backwash arm for passing over the strainer element at least along the upstream side so as to provide a backwash to

remove debris entrained on the strainer element, the improvement comprising:

A. protruding surfaces extending radially beyond the strainer element to form aligned vertical compartments for mating engagement with the backwash arm;

B. straining passageways associated with the strainer element being substantially greater in depth than height and in coaxial alignment with the compartments; and

C. shearing means connected to the backwash arm for engaging the protruding surfaces in spaced relationship to the straining passageways for shearing any entrained debris extending between adjacent compartments.

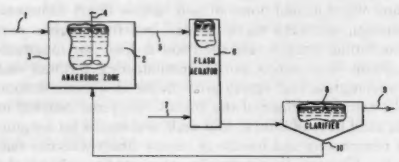
4,315,821
TREATMENT OF NITROGENOUS WASTES

David C. Climenhage, Kingston, Canada, assignor to Du Pont Canada Inc., Mississauga, Canada

Continuation-in-part of Ser. No. 538,757, Jan. 6, 1975, abandoned, which is a continuation-in-part of Ser. No. 390,414, Aug. 22, 1973, abandoned. This application Oct. 10, 1978, Ser. No. 949,433

Int. Cl.³ C02F *3/30*

U.S. Cl. 210—605 **4 Claims**



1. A process for the treatment of aqueous wastes containing nitrogenous matter selected from the group consisting of nitrate and nitrite ions and matter capable of forming nitrate or nitrite ions comprising (a) passing the aqueous waste having a pH less than about 6, a substantial portion of the acidic component of the waste being nitrogenous matter, through an anaerobic treatment zone at a rate such that (1) the concentration of nitrogen in the form of nitrate and nitrite ions in the anaerobic zone is less than about 3 milligrams/liter, and (2) the BOD loading factor of the effluent therefrom is less than 0.25 lb BOD/lb of volatile suspended solids, the anaerobic treatment zone having a pH of at least about 6 and containing acclimatized anaerobic activated sludge and sufficient carbonaceous matter to obtain substantially complete denitrification of the aqueous waste, (b) passing denitrified effluent therefrom to an aerobic treatment zone wherein said matter capable of forming nitrates and nitrites is substantially all converted to nitrates and nitrites and (c) separating and recycling a mixture of sludge and effluent from the aerobic treatment zone to the anaerobic treatment zone at a rate at least as high as the feed rate of aqueous waste to the anaerobic treatment zone.

4,315,822
PROCESS AND APPARATUS FOR SEPARATING LIQUIDS

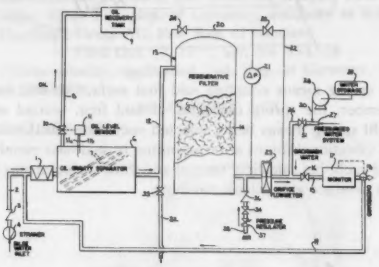
Rajan A. Jaisinghani, Stoughton, Wis., assignor to Nelson Industries, Inc., Stoughton, Wis.

Filed Jan. 26, 1981, Ser. No. 228,248

Int. Cl.³ B01D *17/04*

U.S. Cl. 210—794 **21 Claims**

1. A system for separating a mixture of liquids of different specific gravities, comprising pumping means having an inlet and an outlet, said inlet connected to storage site containing a mixture of liquids of different specific gravities, a first gravity separator unit connected to the outlet of the pumping means whereby the mixture of liquids is pumped from said site to the first separator unit, said first separator unit disposed to separate the liquids with a first liquid of said mixture being collected as a layer in said separator unit and a second of said mixture of liquids normally flowing through said separator unit, liquid discharge conduit means connecting said separator unit with a collection site for conducting said second liquid to said site, first valve means disposed in said discharge conduit means, said first valve means being normally open to permit flow of said second liquid through said separator unit and through said discharge conduit means, drain conduit means connected to the portion of said separator whereat said first liquid is collected, second valve means disposed in said drain conduit means, and means responsive to a predetermined maximum depth of said layer of first liquid in said first separator unit for opening said second valve means and closing said first valve means, whereby operation of said pumping means will pump said layer of said first liquid through said drain conduit means to a second collection site.



6. The system of claim 1, and including sensing means disposed in said discharge conduit means for sensing the presence of said first liquid in the flow stream of said second liquid, recirculating conduit means connecting the discharge conduit means with the inlet of said pumping means, and flow control means for directing the flow of said second liquid through said recirculating conduit means to said pumping means when the amount of said first liquid in the flow stream of said second liquid exceeds a predetermined value.

4,315,823
ANAEROBIC TREATMENT

Enrique R. Witt; William J. Humphrey, and James P. Cave, all of Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.

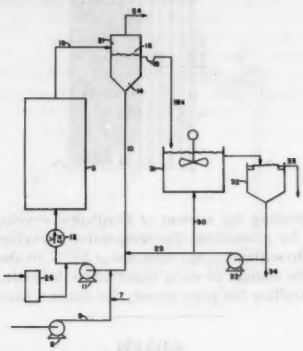
Continuation of Ser. No. 57,545, Jul. 13, 1979, abandoned, which is a continuation of Ser. No. 737,241, Oct. 29, 1976, abandoned. This application May 19, 1980, Ser. No. 150,829

Int. Cl.³ C02F *3/28, 3/30*

U.S. Cl. 210—605 **17 Claims**

1. Process for the treatment of aqueous organic waste streams in an anaerobic filter, with concomitant production of methane gas while supplying alkaline material to the filter to neutralize acids fed thereto and formed therein, to produce a liquid effluent stream containing said methane gas from said filter, said liquid effluent stream having a lower C.O.D. content than said waste stream and containing less than 600 mg per liter of volatile suspended solids, said process comprising separating said methane gas from said liquid effluent stream, separating said liquid effluent stream into two liquid streams, hereafter termed stream a and stream b, withdrawing said liquid stream a while recycling said liquid stream b, to said filter and blending said stream b together with fresh feed of said waste stream, the volumetric rate of said fresh feed being about the

same as the volumetric rate of withdrawal of said liquid stream a, and the ratio of said volumetric rate of feed to the volumetric rate of said recycle being in the range of about 1:1 to 1:20, feeding said withdrawn liquid a to an aerobic digestor to produce an activated sludge slurry, passing said activated sludge slurry to a clarifier to produce activated sludge and a clarified effluent and recycling at least about 20% of the net activated sludge produced in said aerobic digester to said anaerobic



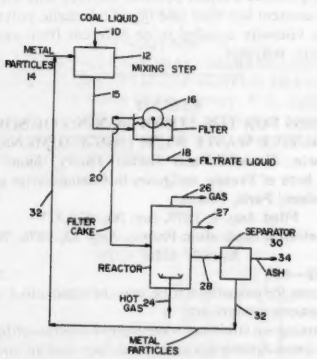
filter, in which process said fresh feed of said waste stream has a C.O.D. of at least about 5000 mg/l, the fresh feed is supplied at a rate which is at least about 0.5 lb. C.O.D. per cubic foot of filter per day, the mixture of said liquid b and said fresh feed has a C.O.D. of at least about 500, said filter comprises packing of such construction that the void volume is about 60%, the hydraulic feed rate in said filter is at least about 1 foot per hour and said fresh feed has a pH of about 3 to 5.

4,315,824

FILTRATION OF COAL-DERIVED LIQUIDS CONTAINING PARTICULATE SOLIDS

Walter F. Karolkiewicz, Trenton, N.J., and Pradip Rao, Media, Pa., assignors to Hydrocarbon Research, Inc., Lawrenceville, N.J.

Filed Jun. 3, 1980, Ser. No. 156,158
Int. Cl.³ B01D *37/02*
U.S. Cl. 210—769 **7 Claims**



7. A method of filtering a coal-derived liquid containing solid particles, comprising:

(a) mixing the liquid with a filter aid material comprising metallic particles having size range of 10 to 400 mesh;

(b) filtering the mixture from (a) to produce a filtrate liquid and a filter cake residue containing unconverted coal and ash solids and the metallic particles;

(c) heating the filter cake obtained from (b) to a temperature between 650° and 2000° F. to gasify the hydrocarbon material contained therein;

(d) separating the metallic particles from the product of (c); and

(e) recycling the recovered metallic particles to mixing step (a) for reuse.

4,315,825

LITHIUM SOAPS OF SUBSTITUTED HYDROXYLATED FATTY ACIDS AND THEIR USE AS THICKENING AGENTS

Dieter Schweizer, Düsseldorf, and Johann Glasl, Solingen, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Jul. 3, 1980, Ser. No. 165,744
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1979, 2927686
Int. Cl.³ C10M *5/14*
U.S. Cl. 252—41 **12 Claims**

1. Lithium soaps of non-terminal vicinal substituted fatty acids having from 16 to 22 carbon atoms wherein said vicinal substituents are a hydroxy group and a group selected from the group consisting of alkanoyloxy having from 2 to 18 carbon atoms, alkenoyloxy having from 3 to 18 carbon atoms, and mixtures of said alkanoyloxy and said alkenoyloxy, said fatty acid being substituted with from 0 to 2 other hydroxyls.

2. The lithium soaps of claim **1** produced by epoxidation of fatty acids having from 16 to 22 carbon atoms and at least one ethylenic unsaturation, reaction of the resulting epoxy fatty acid with a reactant selected from the group consisting of alkanoic acid having from 2 to 18 carbon atoms, alkenoic acid having from 3 to 18 carbon atoms, and mixtures of said alkanoic acid and said alkenoic acid, and reaction with lithium hydroxide to form the lithium salt.

7. A lithium soap of the reaction product of epoxidized oleic acid with an alkanoic acid having from 10 to 18 carbon atoms.

11. A lubricating grease consisting essentially of a liquid phase with lubricant characteristics, conventional lubricant additives in amounts from 0 to 25% by weight, and from 2% to 25% by weight of the lithium soaps of claims **1** or **2** as a lithium soap thickening agent.

4,315,826

REACTION PRODUCTS OF CARBON DISULFIDE WITH THIOMOLYBDENUM DERIVATIVES OF ALKENYLSUCCINIMIDES AND LUBRICANTS CONTAINING SAME

Raymond C. Schlicht; Stephen A. Levine, both of Fishkill, and Harry Chafetz, Poughkeepsie, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Aug. 19, 1980, Ser. No. 179,611
Int. Cl.³ C10N *1/54*
U.S. Cl. 252—46.4 **8 Claims**

1. A composition of the formula:

$$MoS_yO_w(RR'N)_x(CS_2)_z$$

wherein v ranges from 0.5 to 3, w is a number such that v+w ranges from 0.5 to 3, x ranges from 0.8 to 5, y ranges from 1 to 3, and z ranges from 0.5 to 5, R is an alkenylsuccinyl di- or polyamine group having 15 to 300 carbon atoms, and R' is hydrogen, an alkyl group of 1 to 20 carbon atoms, an alkenylsuccinyl amine or an alkenylsuccinyl polyamine group which can be the same as or different from R.

4. A lubricant composition comprising a major amount of an oil of lubricating viscosity and an effective friction-reducing amount of a composition of claim **1**.

5. A process for forming a composition having friction re-

ducing, anti-wear and anti-oxidant properties comprising reacting CS_2 with a composition of the formula:

$$MoS_aO_bH_c(RR'N)_x$$

wherein R is an alkenylsuccinyl di- or polyamine group having from 15 to 300 carbon atoms, a=0.5 to 3, b=2.5–0, c=0–3, x=0.8–5; R′ is hydrogen, an alkyl group of 1 to 20 carbon atoms, an alkenylsuccinyl amine or an alkenylsuccinyl group which can be the same as or different from R; using a molar charge ratio of CS_2 to molybdenum of about 0.5:1 to 5:1, removing the water of reaction which forms and recovering a composition according to claim 1.

4,315,827

LOW-VAPOR-PRESSURE FERROFLUIDS AND METHOD OF MAKING SAME

William R. Bottenberg, Thousand Oaks, Calif., and Mark S. Chagnon, Lowell, Mass., assignors to Ferrofluidics Corporation, Nashua, N.H.

Continuation of Ser. No. 92,369, Nov. 8, 1979, abandoned. This application Feb. 13, 1981, Ser. No. 234,561

Int. Cl.³ H01F *10/10*

U.S. Cl. 252—62.51 **29 Claims**

1. A ferrofluid composition which comprises a colloidal dispersion of finely-divided magnetic particles in a liquid polyphenyl ether carrier and a dispersing amount of a surfactant, which surfactant comprises a surfactant containing a functional polar group which forms a chemical bond with the surface of the magnetic particles and a tail group containing phenyl, benzyl or phenoxy groups which are soluble in the carrier, and a linking group to separate the polar and tail groups, to provide a stable ferrofluid composition.

4,315,828

WATER BASED WINDOW GLASS AND CHROME CLEANER COMPOSITION

Peter K. Church, Cascade, Colo., assignor to Max L. Wymore and Leisure Products Corporation, both of Colorado Springs, Colo., a part interest to each

Continuation-in-part of Ser. No. 885,311, Mar. 10, 1978, Pat. No. 4,213,873. This application Feb. 8, 1980, Ser. No. 119,861

The portion of the term of this patent subsequent to Jul. 22, 1997, has been disclaimed.

Int. Cl.³ C11D *3/43, 1/72*

U.S. Cl. 252—153 **1 Claim**

1. A water based cleaning composition consisting essentially of water on the order of about 59.3 to about 99.58 weight percent, a cleaning agent selected from the group consisting of ammonium hydroxide, a monohydroxy alcohol containing not more than 3 carbon atoms and mixtures thereof on the order of about 0.31 to about 40.3 weight percent plus an amount of a lubricity compound comprised of a water soluble alkyl derivative of ethylene glycol having the formula $ROCH_2(CH_2OCH_2)_nCH_2OR$ wherein n is at least 2 and R is an on the order of about 0.025 to about 0.3 weight percent to impart substantial lubricity to the composition.

4,315,829

METHOD OF PREPARING A BATTERY PASTE CONTAINING FIBROUS POLYFLUOROETHYLENE FOR USE IN THE PLATES OF A LEAD-ACID STORAGE BATTERY

Joseph C. Duddy, Trevose, Pa.; Francis P. Malaspina, Raleigh, N.C., and William J. Martini, Fairless Hills, Pa., assignors to Exide Corporation, Philadelphia, Pa.

Filed Jan. 27, 1978, Ser. No. 872,870

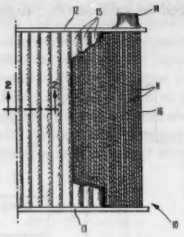
Int. Cl.³ C08L *27/18*

U.S. Cl. 252—182.1 **11 Claims**

1. A method of preparing a battery paste for use in the plates of a lead acid storage battery which comprises the steps of:

(a) mixing a water dispersion of polyfluoroethylene with lead material,

(b) adding an aqueous solution of sulfuric acid to the lead material-dispersion mix and mixing to form a paste having fibrillation developed therein,



(c) controlling the amount of fibrillation developed in the paste by controlling the temperature developed during step (b) within a range from about 20° C. to about 100° C. and the amount of shear imparted to the paste, and

(d) controlling the paste density for use in a battery plate.

4,315,830

METHOD FOR ALTERING THE CHARACTERISTICS OF POLYMERS

David M. French, Alexandria, Va.; J. T. L. Rosborough, Washington, D.C., and Clyde J. Swedenberg, Greenville, S.C., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 19, 1972, Ser. No. 219,184

Int. Cl.³ C06D *5/06;* C09K *3/00*

U.S. Cl. 252—182 **8 Claims**

1. A method of modifying a liquid telechelic polymer for uses requiring a lower reactive group content and a different viscosity which comprises:

reacting to completion said liquid telechelic polymer with an amount of a difunctional reagent which amount does not cause said polymer to solidify so that said polymer has a reduced reactive-group content and an increased viscosity; and

admixing a liquid plasticizing nonfunctional polymer which is structurally similar to said telechelic polymer except for the absence of functional groups with said telechelic polymer to produce a liquid polymer mixture with a reactive-group content less than said liquid telechelic polymer and with a viscosity equaled to or different from said liquid telechelic polymer.

4,315,831

PROCESS FOR THE CONDITIONING OF SOLID RADIOACTIVE WASTE WITH LARGE DIMENSIONS

Bruno Morin, Grenoble, and Daniel Thiery, Saint Martin d'Heres, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Aug. 5, 1977, Ser. No. 822,317

Claims priority, application France, Aug. 13, 1976, 76 24760

Int. Cl.³ G21F *9/36*

U.S. Cl. 252—628 **2 Claims**

1. A process for encasing a solid mass of radioactive waste of large dimensions comprising:

(1) premixing an ambient temperature-thermosetting resin with a cross-linking agent, a plasticizer, and an inert filler;

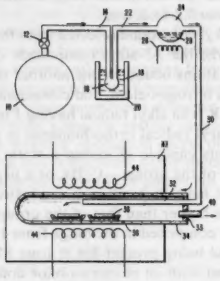
(2) suspending said solid radioactive waste mass in said premixed resin; and

(3) cross-linking said resin, said inert filler serving to reduce shrinkage and prevent cracking during said cross-linking, wherein said radioactive mass is encased in said resin under water.

4,315,832
PROCESS FOR INCREASING LASER CRYSTAL FLUORESCENCE YIELD BY CONTROLLED ATMOSPHERE PROCESSING

Ricardo C. Pastor, Manhattan Beach, and Donald P. Devor, Woodland Hills, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 5, 1979, Ser. No. 17,864
Int. Cl.³ C09K *11/46;* **C01F** *17/00*
U.S. Cl. 252—301.4 R **13 Claims**



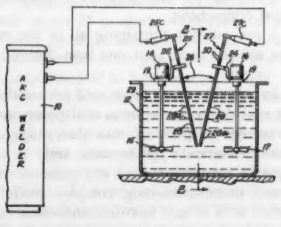
1. A process for modifying the environment of active atoms in a selected material by removing selected impurities from said environment, said impurities being selected from the group consisting of water and water-derived impurities and being substitutionally or interstitially incorporated in said material, which comprises heating said material at a predetermined elevated temperature in an atmosphere conducive to the formation of atomic oxygen for a period of time sufficient to enable said atomic oxygen to react with the atoms and molecules in said environment to thereby remove said impurities and alter selected properties of said material.

12. A Nd-doped laser host crystal selected from the group consisting of $Y_3Al_5O_{12}$, $YAlO_3$, $Gd_3Ga_5O_{12}$, YVO_4, and Y_2O_3 having optimized lasing efficiency, formed by heating said crystal at a predetermined elevated temperature in an atmosphere conducive to the formation of atomic oxygen for a period of time sufficient to enable said atomic oxygen to react with and remove selected impurities from said crystal and thereby increase the fluorescence yield and lasing efficiency of said crystal.

4,315,833
ARC SPUTTERING METHOD OF MAKING COLLOIDAL MAGNESIUM SOL AND APPARATUS THEREFOR

Winston Boyer, The Boyer Ranch, Savery, Wyo. 82332

Division of Ser. No. 881,388, Feb. 27, 1978, Pat. No. 4,214,615. This application Dec. 4, 1979, Ser. No. 100,233
Int. Cl.³ B01J *13/00;* **B01F** *7/22*
U.S. Cl. 252—314 **8 Claims**



1. Apparatus for the preparation of a colloidal magnesium sol in kerosene at a concentration of about 0.05 grams per liter up to about 4.0 grams per liter comprising:

a rectangular transparent tank having a flat upper edge, said tank adapted for holding kerosene and viewing a pair of electrodes in a V relation for arc sputtering;

a pair of electrodes of uniform cross section in V relation immersed in said kerosene;

two electric motor[illegible]d mixers, each a single shaft and bottom propeller, one for mixing on each side of the V paired electrodes;

a cross bar mounting means resting on and across the width of said flat upper edge having mounting apertures for the electrodes and for the two mixers, one placed on each side of said electrodes;

two reversed Z shaped insulated holder supports, each of said supports being formed with an aperture base portion serving as an anchor about the bottom of the motor of the mixer, a mid portion joining the base and top and an apertured top portion which serves as a mounting arm for an electrode of the V pair;

said upper arm portion projecting obliquely and upwardly to thereby mount each electrode of the V pair at a critical angle of about 22 to 30 degrees and placing said V pair at about ¼ to 1 inch from the transparent front edge of said tank with the propeller below the electrodes and on each side thereof when the electrodes are in the V position for sputtering; and

scribed markings on said electrodes which enable the visual monitoring of consumption of the electrodes by arc sputtering.

8. A method of preparing colloidal magnesium sol in kerosene, said method comprising the steps of:

filling a rectangular transparent tank with kerosene and immersing pure magnesium electrodes in V relation at an angle between about 22 and 30 degrees at the bottom of the V;

placing the angularly adjusted V electrodes within about ¼ inch to 1 inch of the front transparent wall to permit visual observation and monitoring of the arc and black cloud formation when the magnesium sol is formed in kerosene;

agitating from below and adjacent the V arc zone by means of propeller agitation to sweep away the black cloud and expose the arc to view;

energizing the electrodes with ½ to 1 ampere current from an arc welder while agitating to view cloud formation;

stopping the arc sputtering after from ¼ to 4 inches of the electrode is consumed; and

filtering the kerosene containing the sol when a predetermined concentration of sol is obtained to remove beads and droplets of coarse magnesium impurity.

4,315,834
PROCESS FOR RECOVERING THE SOOT FORMED DURING THE PRODUCTION OF SYNTHESIS GAS BY PARTIAL OXIDATION OF HYDROCARBONACEOUS MATERIALS

Raymond K. A. Van Deraerschot, Willebroek, Belgium, assignor to A.S.E.D., Brussels, Belgium

Continuation-in-part of Ser. No. 934,286, Aug. 16, 1978, abandoned. This application Jul. 17, 1979, Ser. No. 58,395
Claims priority, application United Kingdom, May 8, 1978, 45542/77
Int. Cl.³ C01B *3/36*
U.S. Cl. 252—373 **6 Claims**

1. A continuous process for separating soot from an aqueous suspension containing said soot obtained in the preparation of a synthesis gas which comprises intimately contacting, at a temperature between about 60° and 205° C., the aqueous suspension with at least a part of a liquid hydrocarbonaceous material having a density of less than about 0.97 kg/liter or more than 1.00 kg/liter at 15° C. feeding a synthesis gas generator and recycling into said gas generator the suspension of soot in the liquid hydrocarbonaceous material after separation of a

clarified water phase by decantation, the aqueous suspension containing the soot being continuously brought intimately into contact with the liquid hydrocarbonaceous material in an amount of at least 10 times the weight of the soot contained in the aqueous suspension so as to obtain a pumpable suspension of soot in said hydrocarbonaceous material by mixing all the aqueous suspension and all the liquid hydrocarbonaceous material in two successive continuous steps effected in two separate static mixers in serial order in such a way that a step-wise rising amount of energy is used for said mixing, the energy amount used in the first mixing step being about 2,100 to about 7,200 Joules per kilogram of soot and per second so as to obtain a substantially complete and continuous transfer of the soot from the aqueous suspension to the liquid hydrocarbonaceous material, and the energy amount used in the second mixing step being about 10,800 to about 33,500 Joules per kilogram of soot and per second so as to reduce the water content of the liquid hydrocarbonaceous material to such an extent that the obtained hydrocarbonaceous material, containing substantially all the soot and having a low water content which is separated from the clarified aqueous phase by decantation can be recycled into said gas generator whereas the aqueous phase is clear and can be disposed of.

4,315,835

COMPONENTS OF CATALYSTS FOR POLYMERIZING ALPHA-OLEFINS AND THE CATALYSTS FORMED FROM THE COMPONENTS

Umberto Scata'; Luciano Luciani, and Pier C. Barbe', all of Ferrara, Italy, assignors to Montedison S.p.A., Milan, Italy

Continuation of Ser. No. 909,047, May 24, 1978, Pat. No. 4,220,554. This application May 7, 1980, Ser. No. 147,521

Claims priority, application Italy, May 25, 1977, 23984 A/77; Jul. 4, 1977, 25344 A/77

The portion of the term of this patent subsequent to Sep. 2, 1997, has been disclaimed.

Int. Cl.³ C08F *4/64*

U.S. Cl. 252—429 B **11 Claims**

1. Process for preparing a carrier for components of catalysts for the polymerization of olefins and having the formula

$$X_nMg(OR)_{2-n}$$

in which n is about 2, R is an alkyl, aryl or cycloalkyl radical containing from 1 to 20 carbon atoms, and X is a halogen atom, which process comprises reacting a Mg compound having the formula

$$X_nMgR_{2-n}$$

in which $O \leqq n < 2$, R is an alkyl, aryl or cycloalkyl radical containing from 1 to 20 carbon atoms and X is a halogen atom, with an ester of orthosilicic acid, in the presence of a halogenating substance.

4,315,836

CATALYSTS FOR POLYMERIZING ALPHA-OLEFINS

Enrico Albizzati, Arona, and Enzo Giannetti, Novara, both of Italy, assignors to Montedison, S.p.A., Milan, Italy

Continuation of Ser. No. 10,238, Feb. 8, 1979, abandoned. This application Apr. 4, 1980, Ser. No. 137,256

Claims priority, application Italy, Feb. 9, 1978, 20096 A/78

Int. Cl.³ C08F *4/64*

U.S. Cl. 252—429 B **29 Claims**

1. Catalysts for polymerizing alpha-olefins $CH_2{=}CHR$, in which R is an alkyl radical having 1 to 6 carbon atoms, mixtures thereof and mixtures thereof with ethylene, comprising the product of the reaction between the following two components:

(a) a solid product comprising a Mg dihalide and complexes of said halide with at least a compound of tetravalent Ti selected from the group consisting of the halides, haloalcoholates and organic carboxylates and a hydrocarbyl electrondonor compound selected from the group consisting of alkyl, aryl and cycloalkyl esters of the organic and inorganic oxygenated acids, the anhydrides, halides, and amides of said acids, ethers ROR' and ketones RCOR', in which R and R', the same or different from one another, are alkyl, cycloalkyl or aryl radicals having 1 to 18 carbon atoms; in which the Mg/Ti ratio between Mg dihalide and Ti compound ranges from 5 to 100, the amount of Ti compound extractable with $TiCl_4$ at 80° C. is lower than 50% and the molar ratio between electron-donor compound and Ti compound ranges, after extraction with $TiCl_4$, from 0.2 to 3, and

(b) an Al alkyl compound selected from the group consisting of trialkyls, the Al alkyl compounds containing two or more Al atoms bound to one another through an oxygen atom or a nitrogen atom, and compounds $AlR_{3-n}(OR')_n$, in which R is an alkyl radical having 1 to 18 carbon atoms, R' is an aryl radical ortho-hindered in positions 2,6 with substituents capable of giving a steric hindrance higher than that of the group $-C_2H_5$, or a naphthyl group containing at least in position 2 a substituent with a steric hindrance higher than that of the group $-C_2H_5$, and n is a number comprised in the range from 1 to 2; said Al alkyl compound being present for at least 85% in a non-combined form with an electron-donor compound and being employed in amounts corresponding to a molar ratio to the Ti compound of component (a) ranging from 1 to 30.

4,315,837

COMPOSITE MATERIAL FOR OZONE REMOVAL

John L. Rourke, Fairport, and Ronald E. Keukelaar, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 16, 1980, Ser. No. 140,915

Int. Cl.³ B01J *31/06*

U.S. Cl. 252—430 **15 Claims**

1. A composite material for the removal of ozone from a gaseous stream comprising a support matrix having coated on its surface an adhering layer of finely divided particles of hopcalite, said support matrix having a relatively broad transition region for coating said adhering layer of finely divided particles of hopcalite hereon, and said support matrix having dimensional stability at the temperature of said ozone containing gaseous stream.

4,315,838

CATALYST PREPARATION TECHNIQUE

Arthur F. Miller, Lyndhurst; James L. Callahan, Wooster, and Wilfrid G. Shaw, Lyndhurst, all of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Filed Jun. 5, 1978, Ser. No. 912,651

Int. Cl.³ B01J *37/00*

U.S. Cl. 252—448 **11 Claims**

1. A process for producing a metal-containing complex oxide catalyst comprising:

forming a pre-catalyst containing all of the metals in said catalyst as well as at least one heat-decomposable material,

forming an aqueous slurry from said pre-catalyst,

dropping said slurry in the form of droplets onto a particle bed whereby droplets of said slurry agglomerate into essentially spherical agglomerates, and

calcining said agglomerates in the presence of oxygen to form said metal-containing complex oxide catalyst, no more than 90% of said heat-decomposable material being removed from said pre-catalyst prior to forming said slurry.

4,315,839

SPHEROIDAL ALUMINA PARTICULATES HAVING BIFOLD POROSITY AND PROCESS FOR THEIR PREPARATION

Gilbert Bouge, Salindres; Roland Jacques, Ales; Regis Poisson, Sevres, and Laurent Seigneurin, Salindres, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Feb. 26, 1980, Ser. No. 124,778
Claims priority, application France, Feb. 26, 1979, 79 04810
Int. Cl.[3] B01J *21/04, 35/08*
U.S. Cl. 252—448 36 Claims

1. Spheroidal alumina particulates having bifold porosity, and comprising a total pore volume ranging from about 0.55 to 1.7 cm^3/g; a micropore volume ranging from about 0.5 to 1 cm^3/g, with a micropore having a pore diameter of less than 0.06 microns; a macropore volume ranging from about 0.05 to 0.7 cm^3/g, with a macropore having a pore diameter of greater than 0.06 microns; a macropore mean diameter ranging from about 0.1 to 10 microns; a specific surface ranging from about 80 to 350 cm^2/g; a breaking strength in excess of 1 kg; and the alumina comprising said spheroidal particulates being essentially completely in at least one of the phases eta, gamma, delta and theta.

4,315,840

PREPARATION OF CATHODIC ELECTROCOATING BINDERS

Fritz E. Kempter, Mannheim; Eberhard Schupp, Schwetzingen, and Erich Gulbins, Heidelberg-Neuenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 18, 1979, Ser. No. 85,965
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1978, 2845988
Int. Cl.[3] C08G *18/80, 18/48;* C08L *91/00;* C08J *3/04*
U.S. Cl. 260—18 TN 21 Claims

1. A process for the preparation of self-crosslinking, cathodic electrocoating binders by reacting polyetherpolyols, which may or may not contain thio groups, with semi-blocked diisocyanates or partially blocked polyisocyanates, wherein the reaction products (A) so obtained and containing blocked isocyanate groups, are further reacted with a polyamine (B) in such a way that one or more amino groups of the polyamine (B) form a urea group with a blocked isocyanate group of the reaction product (A) and the self-crosslinking reaction product of (A) and (B) is thereafter converted into a water-dilutable form in the conventional manner by protonization with an acid.

4,315,841

FILLED MOLDING COMPOSITION FEATURING STAR-BLOCK COPOLYMER CONJUGATED DIENE AND VINYL AROMATIC COMPOUND

Ronald A. Fava, Monroeville, Pa., assignor to ARCO Polymers, Inc., Philadelphia, Pa.

Filed Sep. 5, 1980, Ser. No. 184,503
Int. Cl.[3] C08K *9/04*
U.S. Cl. 260—23.7 M 1 Claim

1. A molding composition having an advantageous impact strength, said molding composition consisting of an initate mixture of from about 25 to about 40 percent of precipitated calcium carbonate particles and about 75 to 60 percent star-block interpolymer of 60 to 95 percent by weight monovinyl aromatic compound and 40 to 5 percent by weight conjugated diene of from 4 to 8 carbon atoms, said star-block interpolymer having been prepared by polymerization using an organolithium catalyst, said star-block interpolymer having from about 3 to 20 arms, at least some of the arms comprising random segments substantially free from significant blocks of either monovinyl aromatic compound or conjugated diene, said precipitated calcium carbonate particles resulting from precipitation at conditions controlled to provide an average size within the range from about 450 to about 850 millimicrons and said particles being modified by a minor amount of coating derived from stearic acid.

4,315,842

HOT MELT COMPOSITION

Shozo Tsuchiya, Tokyo; Akio Oshima, and Hideo Hayashi, both of Yokohama, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 63,406, Aug. 3, 1979, abandoned. This application Jul. 2, 1980, Ser. No. 164,504
Claims priority, application Japan, Aug. 9, 1978, 53-96203; Sep. 14, 1978, 53-113086
Int. Cl.[3] C08L *91/00*
U.S. Cl. 260—28.5 B 12 Claims

1. A hot melt composition comprising:

(A) a hydrogenated resin having a softening point ranging from 60° to 130° C., said hydrogenated resin (A) being prepared by hydrogenating a resin at a hydrogenation percentage of aromatic rings of from 10 to 90%, said resin being prepare by copolymerizing at least two components comprising (a) 100 parts by weight of cyclopentadiene or its derivative selected from the group consisting of cyclopentadiene and dicyclopentadiene and an alkyl substituent thereof and (b) 5 to 50 parts by weight of indene or its derivative selected from the group consisting of indene and an alkyl substituent thereof; and

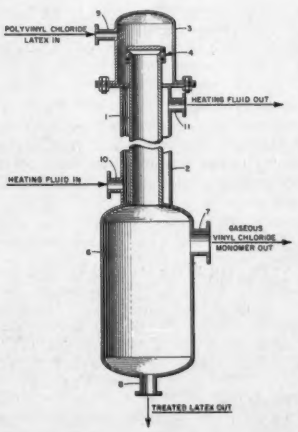
(B) one or more compound selected from the group consisting of ethylene-unsaturated ester copolymers, polyester resins and waxes.

4,315,843

THIN FILM MONOMER REMOVAL FROM POLYVINYL CHLORIDE LATEXES

Graziano Vidotto, Padova; Febo Sellan, Treviso; Enzo Bacchetta, Scorze'; Sandro Mainardi, Marghera, and Giovanni Benussi, Mestre, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed May 27, 1980, Ser. No. 153,605
Claims priority, application Italy, May 28, 1979, 23036 A/79
Int. Cl.[3] C08F *6/16*
U.S. Cl. 260—29.6 PT 3 Claims



1. A process for extracting vinyl chloride monomer from polyvinyl chloride latexes, consisting essentially of causing continuous gravity flow of the latex under vacuum on a heat exchange surface, said latex being in the form of a thin film having a thickness ranging from 0.5 to 1.2 mm, having a temperature between 40° and 70° C. and being under a residual pressure due to the vacuum ranging from 45 to 210 mm Hg,

and removing said monomer concurrently with the flow of said latex, whereby foam formation is substantially prevented.

4,315,844

ORGANIC ELASTOMERS CONTAINING KAOLIN CLAY MODIFIED WITH ISOCYANATE COUPLING AGENTS AND MERCAPTOETHANOL

Peter Aboytes, Borger, Tex., assignor to J. M. Huber Corporation, Locust, N.J.

Filed Jul. 8, 1980, Ser. No. 166,862
Int. Cl.³ C08K *59/16*; C08L *7/00*
U.S. Cl. 260—42.16 **1 Claim**

1. A method of producing an organic elastomer containing a surface treated modified kaolin clay comprising:

(a) vaporizing a diisocyanate compound selected from the group consisting of 2,4-tolylene diisocyanate and 4,4'-diphenylanethane diisocyanate;

(b) contacting said vaporized diisocyanate compound with a dry kaolin clay for a period of time from ten minutes to one hour in the absence of water vapor so that the diisocyanate constitutes a level of from 0.2 to 3% by weight of the kaolin clay;

(c) treating the modified clay with mercaptoethanol; and

(d) blending the resulting surface treated modified clay into an organic elastomer.

4,315,845

PROCESS FOR PREPARING CHEMICALLY PLATABLE THERMOSETTING POWDER COATING

Hiroshi Takahashi, Kasama; Koichi Tsuyama; Nobuo Uozu, both of Shimodate, and Makoto Fujikura, Hitachi, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Mar. 19, 1980, Ser. No. 131,625
Claims priority, application Japan, Mar. 22, 1979, 54-33924; Aug. 2, 1979, 54-99148
Int. Cl.³ C08K *5/15*
U.S. Cl. 260—42.28 **26 Claims**

1. A process for preparing a chemically platable thermosetting powder coating comprising an intimate mixture of components in the following proportions: 100 parts by weight of at least one thermosetting resin having a melting point of up to 150° C., 1 to 30 parts by weight of a rubber component comprising at least 10% by weight of at least one rubber having ethylenic double bonds and polar groups in the molecule and up to 200 parts by weight of at least one inorganic filler, said powder coating having a melt viscosity of up to 10^5 centipoises at least once during the course of heat hardening, the lower limit of the amount of the inorganic filler in the powder coating corresponding to that amount of the inorganic filler used in step (1) of preliminary kneading as described below, which process comprises the steps of:

(1) preliminarily kneading a composition comprising 3 to 50% by weight of at least one thermosetting resin having a melting point of up to 150° C., 5 to 60% by weight of at least one inorganic filler and up to 80% by weight of a rubber component as defined above, the amount of which constitutes the total amount of rubber component in the final powder coating, the minimum rubber component content of the composition being at least twice the rubber component content of the final powder coating, said composition being heated at a temperature of at least the melting point of the thermosetting resin at least once during the course of the preliminary kneading, thereby to effect efficient dispersion of the components;

(2) further kneading said composition together with at least one thermosetting resin having a melting point of up to 150° C. and other components which constitute the powder coating, thereby to effect intimate mixing of the components; and

(3) pulverizing the resulting kneaded mass.

4,315,846

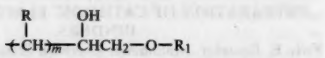
METAL SALT OF N-SUBSTITUTED ALKYLENEBISDITHIOCARBAMIC ACID

Masuo Kuchikata; Hiroshi Tsuyuki, both of Urawa; Toshio Furukawa, Tokyo; Yoshihiro Nitta, Komae, and Hiroshi Kuyama, Urawa, all of Japan, assignors to Tokyo Organic Chemical Industries, Ltd., Tokyo, Japan

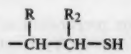
Filed Mar. 26, 1980, Ser. No. 133,994
Int. Cl.³ C07F *3/06*
U.S. Cl. 260—429.9 **13 Claims**

1. A metal salt of N-substituted alkylenebisdithiocarbamic acid represented by the general formula:

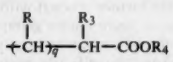
wherein, X denotes a straight or branched aliphatic chain containing at least two carbon atoms linking the nitrogen atoms, Y and Y' each denote a hydrogen atom (excluding the case wherein both Y and Y' are a hydrogen atom),



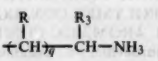
(where, R is a hydrogen atom or an alkyl group, R_1 is a hydrogen atom, an alkyl group, an unsaturated alkyl group, a phenyl group, or a phenyl group substituted with lower alkyl groups or one or more halogen atoms, and m is an integer having the value of 0, 1 or 2),



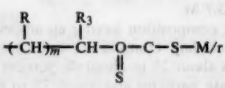
(where R and R_2 are the same as described above),



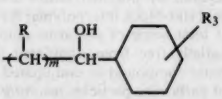
(R is the same as described above, R_3 is a hydrogen atom, a lower alkyl group or a hydroxyl group, R_4 is an alkyl group, a dialkylaminoalkyl group, an unsaturated alkyl group, a hydroxyalkyl group or a salt, and q is an integer having the value of 0 or 1),



(R, R_3 and q are the same as described above),



(where, R, R_3 and m are the same as described above, and M and r are the same as described herein below), or



(where, R, R_3 and m are the same as described above), M

denotes a member of the group consisting of zinc, copper, iron, nickel, magnesium, calcium, cobalt, manganese and tin, and r denotes a valency.

4,315,847

LINEAR SATURATED POLYESTERS OF PHOSPHORIC ACID AND HALOGENATED DIOLS AS FLAME-RETARDANT ADDITIVES AND COATINGS

Robert B. Login, and David D. Newkirk, both of Woodhaven, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 933,986, Aug. 16, 1978, Pat. No. 4,259,222. This application Jul. 20, 1979, Ser. No. 59,170

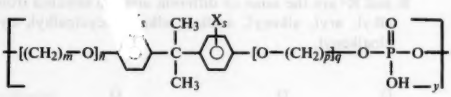
The portion of the term of this patent subsequent to Feb. 16, 1999, has been disclaimed.

Int. Cl.[3] **C08K** *5/52;* **C08L** *67/02*

U.S. Cl. 260—45.7 PH **7 Claims**

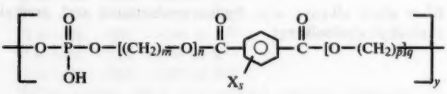
1. A flame-retardant polyester textile fiber composition comprising a normally flammable high-molecular weight poly-(alkylene terephthalate)polymer and as a flame-retardant, a phosphorus- and halogen-containing polymer which is present in a flame-retardant amount, selected from the group consisting of at least one of

A. a saturated polyester comprising the reaction product of a phosphorus acid reactant and either a halogenated bis-hydroxyalkyl aromatic diol or a non-oxyalkylated halogenated aromatic diol or mixtures thereof having the formula:



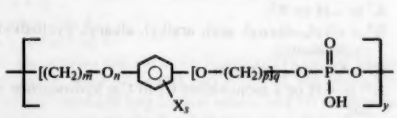
wherein X attached to the aromatic ring represents a halogen atom; s is an integer of 1 to 4; m and p are integers of 2 to 6; n and q are 0 or integers of 1 to 10; and y is an integer of 2 to 100;

B. a saturated polyester comprising the reaction product of a phosphorus acid reactant and a halogenated bis-hydroxyalkyl aromatic diacid having the formula:



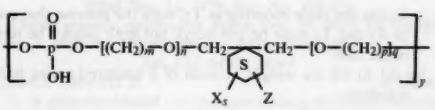
wherein said diacid is selected from the group consisting of phthalic, isophthalic, and terephthalic acids, phthalic anhydride, and esters thereof and wherein X attached to the aromatic ring represents a halogen atom selected from the group consisting of bromine, chlorine, and mixtures thereof; s is an integer of 1 to 4; m and p are integers of 2 to 6; n and q are integers of 1 to 10; y is an integer of 2 to 100;

C. a saturated polyester comprising the reaction product of a phosphorus acid reactant and either a bis-hydroxyalkyl halogenated diphenol or a non-oxyalkylated halogenated dihydroxy benzene or mixtures thereof having the formula:



wherein the X attached to the aromatic ring represents a halogen atom selected from the group consisting of bromine, chlorine, and mixtures thereof; s is an integer of 1 to 4; m and p are integers of 2 to 6; n and q are 0 or integers of 1 to 10; and y is an integer of 2 to 100; and

D. a saturated polyester comprising the reaction product of a phosphorus acid reactant and either a halocyclohexane 1,1-dimethanol or oxyalkylated derivative thereof or mixtures thereof having the formula:



wherein the X attached to the saturated ring represents a halogen atom selected from the group consisting of chlorine, bromine and mixtures thereof; s is an integer of 1 to 2; Z represents hydrogen, an alkyl radical having 1 to 6 carbon atoms or phenyl; m and p are integers of 2 to 6; n and q are 0 or integers of 1 to 10; and y is an integer of 2 to 100; prepared by coating said flammable polymer by immersing in at least one of said organic solvent solution, aqueous dispersion, or aqueous solution of said phorphorus- and halogen-containing polymer.

4,315,848

2-[2-HYDROXY-3,5-DI-(α,α-DIMETHYLBENZYL)-PHENYL]-2H-BENZOTRIAZOLE AND STABILIZED COMPOSITIONS

Martin Dexter, Briarcliff Manor, and Roland A. E. Winter, Armonk, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 36,914, May 10, 1979, which is a continuation-in-part of Ser. No. 918,984, Jun. 26, 1978, Pat. No. 4,226,763. This application Oct. 1, 1980, Ser. No. 192,741

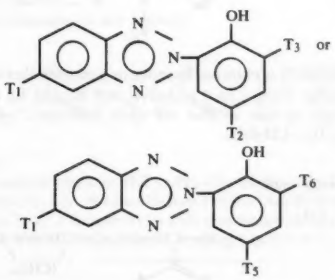
Int. Cl.[3] **C08K** *5/34;* **C09D** *3/80, 5/00*

U.S. Cl. 260—45.8 NT **14 Claims**

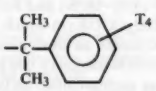
1. An automotive topcoat finish, lacquer or enamel composition exhibiting retention of gloss and resistance to delamination on weathering which comprises

(a) a thermoplastic acrylic resin or a thermoset acrylic resin,

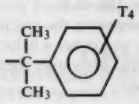
(b) 0.1 to 5% by weight of resin of a compound of the formula



wherein T_1 is hydrogen or chloro, T_2 and T_3 are independently the group



where T_4 is hydrogen or lower alkyl, T_5 is tert-octyl or the group



, and

T_6 has the same meaning as T_5, with the proviso that one of T_5 and T_6 must be tert-octyl, but both cannot be tert-octyl, and

(c) 0.1 to 5% by weight of resin of a hindered amine light stabilizer.

4,315,849

FLAME-RESISTANT PLASTICS MOULDING MATERIAL

Lothar Buxbaum, Lindenfels, Fed. Rep. of Germany; Jürgen Habermeier, Pfeffingen, Switzerland; Franz Breitenfellenr, Bensheim, and Thomas Kainmüller, Lindenfels, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 22, 1980, Ser. No. 180,264

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1979, 7797/79

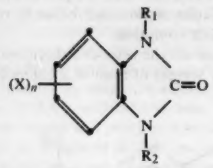
Int. Cl.³ C08K *5/34*

U.S. Cl. 260—45.75 B **10 Claims**

1. A flame-resistant plastics molding composition which comprises

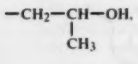
(a) at least one polymer other than a polysulfone in admixture with

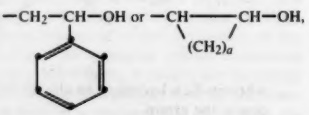
(b) 5 to 30% by weight of said polymer of a halogenated benzimidazolone of formula I



(I)

wherein X is chlorine, bromine or a mixture thereof, n is a number from 1 to 4 inclusive, and R_1 and R_2 independently of one another are each hydrogen, $-CH_2OH$, $-CH_2-CH_2OH$,





in which a is 3 or 4; or R_1 and R_2 are each $-CH_2CH_2COOR_3$ or $-CH_2COOR_3$ in which R_3 is hydrogen, alkyl having 1 to 18 C atoms, an alkali metal ion, one equivalent of an alkaline earth metal ion or one equivalent of zinc ion; or R_1 and R_2 are each an alkali metal ion, one equivalent of an alkaline earth metal ion, or one equivalent of zinc ion; with the proviso that none of component (b) chemically reacts with said polymer (a).

4,315,850

ORGANOHALIDE POLYMERS STABILIZED WITH AN ORGANOTIN COMPOUND AND AN ORTHO MERCAPTO PHENOL COMPOUND

Thomas G. Kugele, Cincinnati, Ohio, assignor to Carstab Corporation, Reading, Ohio

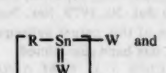
Filed Feb. 26, 1981, Ser. No. 238,517

Int. Cl.³ C08K *5/58*

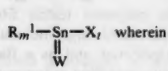
U.S. Cl. 260—45.75 S **23 Claims**

1. A stabilizer composition comprising:

A. an organic tin compound or mixture of organic tin compounds selected from compounds having the formulas:



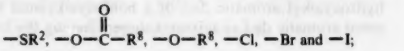
(I)



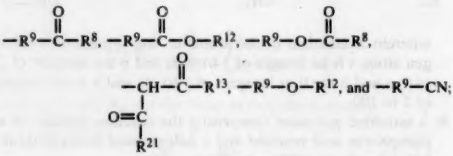
(II)

W is oxygen or sulfur;

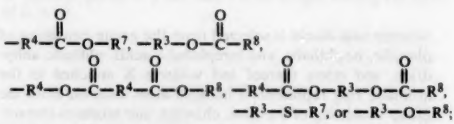
X is selected from



R and R^1 are the same or different and are selected from alkyl, aryl, alkenyl, aralkyl, alkaryl, cycloalkyl, cycloalkenyl,



R^2 is alkyl, alkenyl, aryl, hydroxy-substituted aryl, aralkyl, cycloakyl, cycloalkenyl,



R^3 is alkylene of at least 2 carbon atoms, arylene, alkenylene of at least 2 carbon atoms, cycloalkylene, or cycloalkenylene

R^4 is alkylene, arylene, alkenylene of at least 2 carbon atoms, cycloalkylene, or cycloalkenylene;

R^7 is —H or R^8;

R^8 is alkyl, alkenyl, aryl, aralkyl, alkaryl, cycloalkyl, or cycloalkenyl;

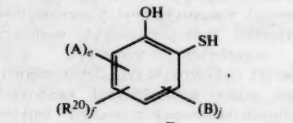
R^9 is C_1 to C_4 alkylene;

R^{12} is —H or a monovalent C_1 to C_{20} hydrocarbon radical;

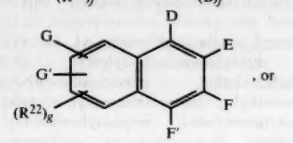
R^{13} and R^{21} are the same or different and are each C_1 to C_{20} alkyl or C_1 to C_{20} alkoxy; and

m=1 or 2 and t=0 or 1 with the proviso that m+t=2; and

B. an organic compound or mixture of organic compounds selected from compounds having the following formulas:

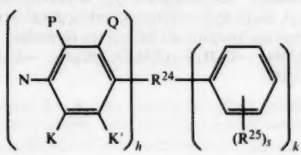


(III)



(IV)

, or



(V)

wherein

A is nothing, —OH or —SH,
B is nothing, —OH or —SH
D is —H, —SH, —OH or R^{26}
E is —H, —OH, —SH or R^{26}
F is —H, —SH, —OH or R^{26}
F' is —H, —OH, —SH or R^{26}
G is nothing, —OH or —SH
G' is nothing, —SH or —OH
K is —H, —SH, —OH or R^{23}
K' is —H, —OH, —SH or R^{23}
N is —H, —SH, —OH or R^{23}
P is —H, —SH, —OH or R^{23}
Q is —H, —SH, —OH or R^{23}
R^{20} is nothing, alkyl, aryl, alkenyl, alkaryl, cycloalkyl, alkoxy or halogen,
R^{26} is alkyl, alkenyl or halogen
R^{22} is alkyl, alkenyl or halogen
R^{23} is alkyl, alkenyl or halogen
R^{24} is alkylene or alkenylene
R^{25} is alkyl, alkenyl, halogen, —SH or —OH
e is 0 to 2
j is 0 to 2
f is 0 to 3
s is 0 to 3
g is 0 to 3
h is 1 to 4
k is 0 to 3
h+k is 2 to 4
e+j+f is 0 to 4

with the proviso that (1) in the formula (IV) two of groups D, E, F and F' must be an OH group and an SH group bonded directly to adjacent ring carbon atoms, and (2) in formula (V) two of groups K, K', N, P and Q must be an OH group and an SH group bonded directly to adjacent ring carbon atoms.

22. A polymer composition comprising a halogen-containing organic polymer normally susceptible to heat induced deterioration and a stabilizingly effective amount of a stabilizer composition according to claim **1** or **2**.

4,315,851

PHARMACEUTICAL COMPOSITION HAVING ANTITUMOR ACTIVITY

Chikao Yoshikumi, Kunitachi; Takayoshi Fujii, Tokyo; Masahiko Fujii, Tokyo; Kenichi Matsunaga, Tokyo; Yoshiharu Oguchi, Yono, and Koichi Niimura, Sayama, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 14, 1979, Ser. No. 103,474
Claims priority, application Japan, Dec. 29, 1978, 53/161388; Nov. 2, 1979, 54/142152; Nov. 2, 1979, 54/142153
Int. Cl.³ A61K *39/44*
U.S. Cl. 260—112 B **8 Claims**

1. A pharmaceutical composition having antitumor activity without causing pyrexia and anaphylaxis which comprises antitumor antibodies purified by affinity-chromatography bound to an antitumor substance having at least one amino group or carboxyl group by amide bonding.

4,315,852

EXTRACTION OF INTERFERON FROM BACTERIA

Paul Leibowitz, Hackensack, and Marvin J. Weinstein, East Brunswick, both of N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 210,426, Nov. 26, 1980. This application Dec. 29, 1980, Ser. No. 221,135
Int. Cl.³ A61K *45/02*
U.S. Cl. 260—112 R **8 Claims**

1. A method of extracting leucocyte interferon from interferon-expressing bacterial cells comprising acidifying a suspension of interferon-containing bacterial cells, removing substantially all of the suspension liquid from the cells, preparing a second suspension of the acidified cells, neutralizing said second suspension, separating the interferon containing liquid from the suspended cells, and extracting the interferon from said liquid.

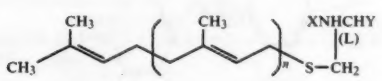
4,315,853

POLYPRENYLPEPTIDES AND THEIR PRODUCTION

Masahiko Fujino, Takarazuka, and Chieko Kitada, Sakai, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Aug. 26, 1980, Ser. No. 182,400
Claims priority, application Japan, Sep. 4, 1979, 54-113663
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 R **9 Claims**

1. A compound of the formula:



wherein

X is peptide chain of H-Tyr-Pro-Glu-Ile-Ser-Trp-Thr-Arg-Asn-Gly- or H-Glu-His-Asp-Pro-Ser-Ala-Pro-Gly-Asn-Gly-Tyr-; Y is carboxyl which may be amidated or esterified with C_{1-3} alkyl; and n is integer of 3,4 or 5.

4,315,854

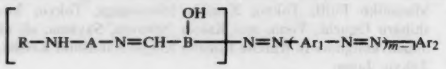
CHROMIUM AND COBALT COMPLEX AMINO HYDROXY AZOMETHINE DYES

Alois Püntener, Rheinfelden, and Fabio Beffa, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 24, 1980, Ser. No. 132,964
Claims priority, application Switzerland, Mar. 28, 1979, 2877/79; Mar. 3, 1980, 1663/80
Int. Cl.³ C09B *45/16, 45/20, 45/26, 45/30*
U.S. Cl. 260—145 A **7 Claims**

1. A 1:2 metal complex dye which contains, bonded to a

heavy metal atom, two identical or different azomethines of the formula



wherein R is hydrogen, unsubstituted C_1–C_6 alkyl, C_1–C_6-alkyl substituted by hydroxy or cyano, benzyl, phenyl, C_1–C_6-alkylsulfonyl, or phenylsulfonyl, wherein any phenyl ring of R is unsubstituted or substituted by cyano, halo, nitro, sulfo, carboxyl, sulfamoyl, N-C_1–C_6-alkylsulfamoyl, N,N-di-C_1–C_6-alkylsulfamoyl, C_1–C_6-alkylsulfonyl, phosphono, C_1–C_6-alkyl, C_1–C_6-alkoxy, benzoylamino, C_1–C_6-alkanoylamino or C_1–C_6-alkoxycarbonylamino; A is ethylene, propylene, 1,2-dicyanovinylene, 1,2-phenylene or 1,2-phenylene substituted by sulfo, sulfamoyl, N-C_1–C_6-alkylsulfamoyl, N,N-di-C_1–C_6-alkylsulfamoyl, C_1–C_6-alkyl, C_1–C_6-alkylsulfonyl, chlorine, bromine, nitro, C_1–C_6-alkoxy or carboxy; B is o-hydroxyphenyl or o-hydrophenyl substituted by one or more groups selected from the group consisting of C_1–C_6-alkyl and halo; Ar_1 is phenylene; phenylene substituted by sulfo, C_1–C_6-alkyl, or C_1–C_6 alkoxy; naphthylene or naphthylene substituted by sulfo; Ar_2 is phenyl; phenyl substituted by chloro, bromo, nitro, C_1–C_6-alkanoylamino, sulfo, sulfamoyl, N-C_1–C_6-alkylsulfamoyl, N,N-di-C_1–C_6-alkylsulfamoyl, C_1–C_6-alkylsulfonyl, C_1–C_6-alkyl, or C_1–C_6-alkoxy; naphthyl; or naphthyl substituted by sulfo; and m is 1 or 2; wherein at least one of R, A, Ar_1 and Ar_2 contain at least one water solubilizing group.

4,315,855

MONOAZO DISPERSE DYES CONTAINING A NITROPHENYL GROUP AND A HOMOPHTHALIMIDE GROUP

Ernst Schefczik, Ludwigshafen, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

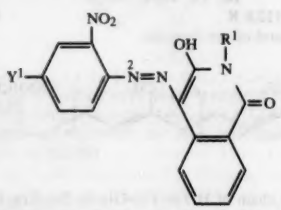
Continuation of Ser. No. 188,610, Oct. 12, 1971, abandoned. This application Jul. 22, 1976, Ser. No. 707,498

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1970, 2050657

Int. Cl.[3] **C09B** *29/42;* **D06P** *3/26, 3/42, 3/54*

U.S. Cl. 260—155 **1 Claim**

1. An azo dye of the formula:

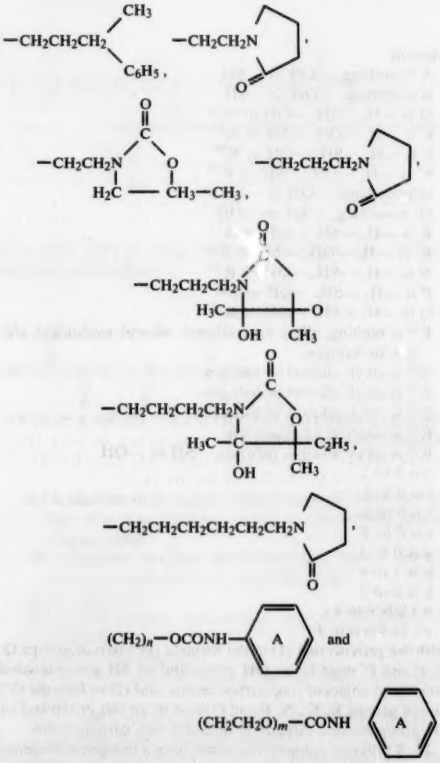


(Ia)

in which

Y^1 is hydrogen, chlorine, carboalkoxy selected from the group consisting of carbomethoxy, carboethoxy, carbopropoxy, carbobutoxy, carbo-β-ethylhexoxy, carbo-β-hydroxyethoxy, carbo-ω-hydroxypentoxy, carbo-ω-hydroxyhexoxy, carbo-β-methoxyethoxy and carbo-β-butoxyethoxy or N-substituted carbamoyl selected from the group consisting of N-methylcarbamoyl, N-ethylcarbamoyl, N-propylcarbamoyl, N-butylcarbamoyl, N-β-ethylhexylcarbamoyl, N-β-hydroxyethylcarbamoyl, N-β-hydroxypropylcarbamoyl, N-γhydroxypropylcarbamoyl, N-β-methoxyethylcarbamoyl, N-γ-methoxypropylcarbamoyl, N-γ-butoxypropylcarbamoyl, N-γ-(β′-ethylhexoxy)-propylcarbamoyl, N,N-dimethylcarbamoyl, N,N-diethylcarbamoyl, N,N-dipropylcarbamoyl, N,N-dibutylcarbamoyl, N-methyl-N-β-hydroxyethylcarbamoyl, N,N-di-β-hydroxyethylcarbamoyl, N-benzylcarbamoyl, and N-phenylethylcarbamoyl; and

R^1 is selected from the group consisting of methyl, ethyl, propyl, isopropyl, butyl, isobutyl, tert-butyl, n-hexyl, β-ethylhexyl, n-decyl, β-methylnonyl, stearyl, β-hydroxyethyl, β-methoxyethyl, γ-hydroxypropyl, β-hydroxypropyl, γ-methoxypropyl, γ-ethoxypropyl, γ-(β-ethylhexoxy)-propyl, γ-acetoxypropyl, γ-propionyloxypropyl, benzoyloxyethyl, benzoyloxypropyl, methoxyacetoxypropyl, α-methyl-β-hydroxypropyl, β-methyl-β-hydroxypentyl, ω-hydroxyhexyl, carboxymethyl or carboxypropyl, ethoxycarbonylmethyl, methoxycarbonylpropyl, dimethylaminocarbonylmethyl, butylaminocarbonylmethyl, phenylaminocarbonylpropyl, carboxyethyl, carboxypentyl, methoxycarbonylethyl, ethoxycarbonylpentyl, diethylaminocarbonylethyl, β-ethylhexylaminocarbonylethyl, phenylaminocarbonylpentyl, acetylaminoethyl, propionylaminoethyl, acetylaminopropyl, acetylaminobutyl, propionylaminobutyl, benzoylaminobutyl, acetylaminohexyl, ω-cyanopentyl, ω-cyanohexyl, β-(β′-hydroxyethoxy)-ethyl, β-(β′-acyloxyethoxy)-ethyl and the radicals having the formulae: $—C_2H_4S—C_2H_4OH$, $—C_2H_4S—C_2H_4OCOC_6H_5$, $—C_2H_4SC_2H_4OCOC_2H_5$,



4,315,856
PROCESS FOR PREPARING 2,2-AZOBIS(2,4-DIMETHYLPENTANENITRILE)

Earl P. Moore, Jr., Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 4, 1980, Ser. No. 117,987
Int. Cl.³ C07C 107/02
U.S. Cl. 260—192 **5 Claims**

1. A process for the preparation of 2,2'-azobis(2,4-dimethylpentanenitrile) comprising:

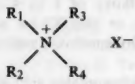
(a) reacting at a temperature of from −10° C. to 30° C.;

(i) 2-amino-2,4-dimethylpentanenitrile;

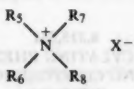
(ii) a 5 to 10% by weight aqueous metal hypochlorite solution having at least 18 g excess base per liter (15% basis);

(iii) an ionic organic or inorganic bromide compound;

(iv) at least 0.75% by weight based on the pentanenitrile of a mixture of quaternary ammonium compounds of formula A



where R_1, R_2, R_3 and R_4 are alkyl groups with 1–18 carbon atoms, with one alkyl group having 10–18carbon atoms and the remaining three alkyl groups having one or two carbon atoms; and formula B



where R_5, R_6, R_7 and R_8 are alkyl groups with 1–14 carbon atoms, with at least two alkyl groups having 6–14 carbon atoms each with the total number of carbon atoms in $R_5+R_6+R_7+R_8$ from 16–30 and X in both formulas is chloride, bromide, hydroxide, acetate, formate or any other anionic group which does not deleteriously affect the performance of the quaternary ammonium cation, provided that if X in either formula is bromide the component (iii) need not be present; the equivalent ratio of (ii) to (i) being from 1.2:1 to 1.8:1, a bromide ion to (iv) equivalent ratio being from 0.4:1 to 12.0:1, and the mole ratio of the compound of formula A to that of formula B being from 0.5:1 to 2.0:1,

(b) recovering the 2,2'-azobis(2,4-dimethylpentanenitrile) produced.

4,315,857
PROCESS FOR THE SYNTHESIS OF AZOBENZENE COMPOUNDS HAVING A CYANO GROUP IN ONE OR BOTH OF THE ORTHO POSITIONS OF THE DIAZO COMPONENT RADICAL

Paul Buecheler, Reinach, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed Jul. 14, 1980, Ser. No. 168,614
Claims priority, application Switzerland, Jul. 20, 1979, 6776/79
Int. Cl.³ C09B 43/00, 43/40
U.S. Cl. 260—207.1 **19 Claims**

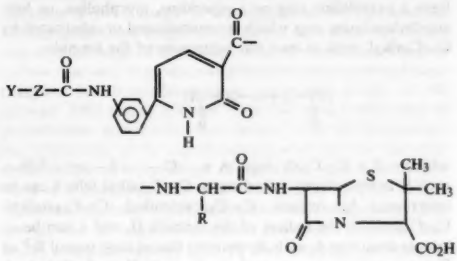
1. A process for the synthesis of an azobenzene compound having a cyano group in one or both of the positions of the diazo component radical that are ortho to the azo radical comprising reacting the corresponding azobenzene compound having a chloro, bromo or iodo substituent in one or both of the positions of the diazo component radical that are ortho to the azo radical with a copper thiocyanate or copper thiocyanate-forming mixture of salts in the presence of an oxidizing agent, whereby the ortho chloro, bromo or iodo substituent or, if two ortho chloro, bromo or iodo substituents are present, at least one of them is replaced by a cyano group.

4,315,858
ANTIBACTERIAL AMIDE COMPOUNDS

Leonard Doub, Tuscon, Ariz.; Theodore H. Haskell, Ann Arbor, Mich.; Thomas F. Mich, Ann Arbor, Mich., and Dietrich Schweiss, Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Sep. 24, 1980, Ser. No. 190,128
Int. Cl.³ C07D 499/70, 401/12, 213/64
U.S. Cl. 260—239.1 **18 Claims**

1. A compound of the formula



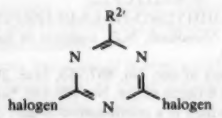
and pharmaceutically acceptable salts thereof; wherein Z is a single bond and Y is lower alkyl, benzyl, CF_3, lower alkyl amino, lower alkyl carbonyl, lower alkoxy carbonyl, benzyloxy, and lower alkoxy, where X is a methylene group and Y is cyano, tetrazolyl, R^1CH_2S where R^1 is CF_3 or CN and R is phenyl, 4-hydroxyphenyl, 2-thienyl or cyclohexa-1,4-dien-1-yl.

4,315,859
1,3,5-TRIAZINES CONTAINING AT LEAST ONE PIPERIDINE RADICAL

Erwin Nikles, Liestal, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

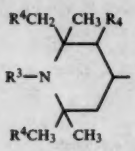
Filed Jan. 4, 1980, Ser. No. 109,733
Claims priority, application Switzerland, Jan. 15, 1979, 357/79
Int. Cl.³ C07D 251/18, 251/22, 251/70, 403/14
U.S. Cl. 260—243.3 **3 Claims**

1. A polyamine-1,3,5-triazine obtained by the reaction of a halogeno-1,3,5-triazine of formula XVIII

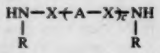


(XVIII)

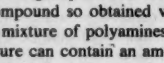
wherein $R^{2'}$ is halogen, cyano, azido, hydrazido, phenyl, —O—R^7, —SR^7 or —N$R^8R^{8'}$, in which R^7 is hydrogen, C_1–C_{18}alkyl, C_3–C_{12}alkenyl, C_3–C_{18}alkoxyalkyl, C_3–C_{12}cycloalkyl, C_7–C_{18}aralkyl, C_6–C_{10}aryl or the radical of the formula II



wherein R^3 is hydrogen, C_1–C_{18}alkyl, C_3–C_{12}alkenyl, C_3–C_5alkynyl, C_3–C_{18}alkoxyalkyl, C_2–C_4hydroxyalkyl which is unsubstituted or substituted by phenyl or phenoxy, or is C_7–C_{18} aralkyl, and R^4 is hydrogen or methyl, and each of R^8 and $R^{8'}$ independently is hydrogen, C_1–C_{23}alkyl which can be interrupted by oxygen, C_3–C_{18}alkenyl, C_3–C_5alkynyl, C_2–C_{10}hydroxyalkyl, C_2–C_5cyanoalkyl, C_3–C_{12}cycloalkyl, C_7–C_{18}aralkyl, C_6–C_{10}aryl or the radical of the formula II, or R^8 and $R^{8'}$ together with the nitrogen atom to which they are attached form a pyrrolidine ring or a piperidine, morpholine, or hexamethyleneimine ring which is unsubstituted or substituted by C_1–C_4alkyl, with at least one polyamine of the formula

 (XIX)

wherein X is C_2–C_6alkylene, A is —O—, —S— or —NR—, each R independently is hydrogen, C_1–C_{23}alkyl which can be interrupted by oxygen, C_3–C_{12}cycloalkyl, C_7–C_{18}aralkyl, C_6–C_{10}aryl or the radical of the formula II, and c can be an integer from 1 to 4, with the proviso that at least one of $R^{2'}$ or R is or contains a group of the formula II, and, if desired, treating the compound so obtained with an acylating agent, such that, if a mixture of polyamines of the formula XIX is used, said mixture can contain an amount of an amine of the formula XIX in which c is 0, and whenever $R^{2''}$ is halogen, or if terminal halogen atoms are still present, the compound obtained can subsequently additionally be reacted with compounds of the formula XX

 (XX)

wherein $R^{2''}$ has the same meaning as $R^{2'}$ excepting halogen and phenyl.

4,315,860

5-PYRROLIDINO, PIPERIDINO OR N'-2-HYDROXYETHYLPIPERAZINO-7-PHENYL OR SUBSTITUTED PHENYL-2,3-DIHYDRO-1H-1,4-DIAZEPINES

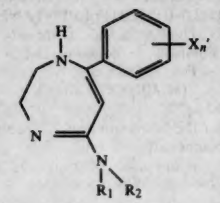
William R. Simpson, Mendham, N.J., assignor to Sandoz, Inc., East Hanover, N.J.

Continuation-in-part of Ser. No. 887,953, Mar. 20, 1978, abandoned, which is a division of Ser. No. 725,440, Sep. 22, 1976, Pat. No. 4,096,140, which is a continuation-in-part of Ser. No. 528,344, Nov. 29, 1974, abandoned, which is a continuation-in-part of Ser. No. 456,017, Mar. 29, 1974, Pat. No. 3,929,884. This application Dec. 26, 1979, Ser. No. 107,428

Int. Cl.³ C07D *419/04*

U.S. Cl. 260—245.7 **6 Claims**

1. A compound of the formula



wherein

R_1 and R_2 taken together and with the nitrogen atom to which they are joined are pyrrolidino, piperidino or N'-2-hydroxyethylpiperazino,

each

X' is independently non-sterically hindered alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms chloro, bromo or fluoro, or two X's on adjacent carbon atoms together are methylenedioxy, and

n is 0, 1, 2 or 3,

or a pharmaceutically acceptable acid addition salt thereof.

4,315,861

PROCESS FOR O-ACYLATING PHENOL DERIVATIVES AND ACYLATING COMPOSITIONS FOR THIS PURPOSE

Gyorgy Lugosi, Felsogod; Antal Simay, Budapest; Janos Bodnar, Budapest; Istvan Turcsan, Budapest; Istvan Jelinek, Budapest; Eva Somfai, Budapest, and Laszlo Simandi, Budapest, all of Hungary, assignors to Chinoin Gyögyszer RT, Budapest, Hungary

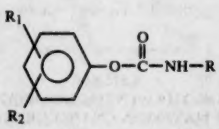
Continuation-in-part of Ser. No. 201,508, Oct. 28, 1980. This application Mar. 23, 1981, Ser. No. 246,412

Claims priority, application Hungary, Nov. 8, 1979, CI 1984

Int. Cl.³ C07D *317/10*; C07C *125/067*

U.S. Cl. 260—340.9 R **6 Claims**

1. A process for preparing a carbamic acid phenyl ester of the formula (I)

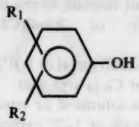


wherein

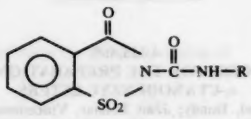
R is alkyl having 1 to 8 carbon atoms, aryl, cycloalkyl having 5 or 6 carbon atoms, or aralkyl having 7 to 16 carbon atoms, wherein the aryl, cycloalkyl, or aralkyl is unsubstituted or substituted by at least one alkyl group having 1 to 8 carbon atoms; R_1 is hydrogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, cyanomethyl, 1,3-dioxolan-2-yl, or carboalkoxyamino wherein the alkoxy group contains 1 to 4 carbon atoms;

R_2 is hydrogen, halogen, alkyl having 1 to 4 carbon atoms, or alkoxy having 1 to 4 carbon atoms; or

R_1 and R_2 form together a carbocyclic ring or a heterocyclic ring fused to the phenyl ring wherein the carbocyclic ring or heterocyclic ring is unsubstituted or substituted by at least one alkyl having 1 to 8 carbon atoms, which comprises acylating a phenol of the formula (II)



with a compound of the formula (IV)



in the presence of a base.

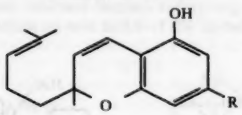
4,315,862

PROCESS FOR PREPARING CANNABICHROMENE

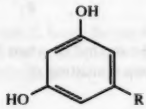
Mahmoud A. Elsohly, and Carlton E. Turner, both of Oxford, Miss., assignors to The University of Mississippi, University, Miss.

Filed May 31, 1979, Ser. No. 44,350
Int. Cl.³ C07D 311/58
U.S. Cl. 260—345.2 10 Claims

1. A method for the preparation of cannabichromene and cannabichromene analogues of the formula



wherein R is hydrogen, C_1–C_{10}-alkyl or C_2–C_{10}-alkenyl, comprising reacting a substituted resorcinol of the formula



wherein R is hydrogen, C_1–C_{10}-alkyl or C_2–C_{10}-alkenyl with citral in the presence of a primary amine.

4,315,863

HIGHLY MALEATED WAX AND PROCESS FOR PRODUCING THE SAME

Toru Tomoshige, Otake; Harumi Furuta, Iwakuni; Akihiro Tachi, Otake, and Nobuyuki Kawamoto, Yanai, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Aug. 6, 1980, Ser. No. 175,701
Claims priority, application Japan, Aug. 10, 1979, 54-101169
Int. Cl.³ C07D 307/60
U.S. Cl. 260—346.74 4 Claims

1. A process for producing a maleated saturated hydrocarbon wax comprising the step of reacting a melt of a saturated hydrocarbon wax having a number-average molecular weight of 400 through 5000 selected from the group consisting of polyethylene waxes which are derived from the polymerization of ethylene or the copolymerization of ethylene and other alpha-olefins, in the presence of hydrogen, in an inactive solvent, at a temperature of 120 through 300° C., by using a titanium compound highly activated with a magnesium compound, and an organoaluminum compound; polymethylene waxes which are derived from a Fischer-Tropsch synthesis and the subsequent hydrogenation by using a conventional hydrogenation catalyst; hydrogenated products of cracked waxes derived from high molecular weight polyethylene, and mixtures thereof with 16 through 70 parts by weight, based on 100 parts by weight of the starting wax, of maleic anhydride in the presence of an organic peroxide at a temperature of from the melting point of the saturated hydrocarbon wax to 220° C. by continuously adding the maleic anhydride and the organic peroxide to the molten saturated hydrocarbon wax in such a manner that the addition rate of the maleic anhydride is within the range of 0.1 to 10 parts by weight per hour, based on 100 parts by weight of the starting saturated hydrocarbon wax, and that the addition rate of the organic peroxide is within the range of 5.0 to 30.0% by mol, based on the addition mol number of the maleic anhydride.

2. A maleated saturated hydrocarbon wax having a number-average molecular weight of 500 through 6000, a content of a maleic anhydride unit of 17 to 30% by weight and, a melt viscosity of 10^2 through 10^6 centipoises at 140° C., and the average graft chain length of the maleic anhydride unit of said wax is in the range of from 1 to 2 wherein the saturated hydrocarbon wax used to produce said maleated saturated hydrocarbon wax has a number-average molecular weight of 400 through 5000 and is selected from the group consisting of polyethylene waxes which are derived from the polymerization of ethylene or the copolymerization of ethylene and other alpha-olefins, in the presence of hydrogen, in an inactive solvent, at a temperature of 120 through 300° C., by using a titanium compound highly activated with a magnesium compound, and an organoaluminum compound; polymethylene waxes which are derived from a Fisher-Tropsch synthesis and the subsequent hydrogenation by using a conventional hydrogenation catalyst; hydrogenated products of cracked waxes derived from high molecular weight polyethylene, and mixtures thereof.

4,315,864

PREPARATION OF MALEIC ANHYDRIDE

Noel J. Bremer, Stow, and Dennis E. Dria, Cleveland, both of Ohio, assignors to Standard Oil Company (Ohio), Cleveland, Ohio

Filed Oct. 22, 1980, Ser. No. 199,401
The portion of the term of this patent subsequent to Jan. 12, 1998, has been disclaimed.
Int. Cl.³ C07D 307/60
U.S. Cl. 260—346.75 11 Claims

1. A process for the production of maleic anhydride by the oxidation of n-butane, n-butene, 1,3-butadiene or a mixture thereof with molecular oxygen or oxygen-containing gas in the vapor phase at a reaction temperature of 250° C.–600° C. in the presence of a catalyst containing the mixed oxides of vanadium and phosphorus, wherein said catalyst is prepared by

(a) introducing a pentavalent vanadium-containing compound into an olefinic, oxygenated organic liquid-containing liquid medium,

(b) effecting reduction of at least a portion of said vanadium to a valence state of about +4 and in the absence of a corrosive reducing agent;

(c) adding a phosphorus-containing compound to said medium prior to or subsequent to effecting said reduction to form a catalyst precursor;

(d) recovering the catalyst precursor;

(e) drying the catalyst precursor;

(f) calcining the catalyst precursor.

4,315,865

PROCESS FOR THE PRODUCTION OF SULFURIC ACID SEMIESTER COMPOUNDS BY SULFATION IN A MACHINE EMPLOYING KNEADING ACTION

Ernst Hoyer, Frankfurt am Main; Hans H. Steuernagel, and Dieter Wagner, both of Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 820,851, Aug. 1, 1977, abandoned. This application May 31, 1978, Ser. No. 911,136

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1976, 2634855; Aug. 3, 1976, 2634909

Int. Cl.[3] C09B *1/30, 43/24, 45/00, 57/14*

U.S. Cl. 260—373 7 Claims

1. In a process for the preparation of a compound of the formula

$$F{-}SO_2{-}CH_2{-}CH_2{-}OSO_3H)_n$$

in which F is the radical of an organic dyestuff molecule and n is the number 1, 2, 3 or 4, by esterification of a compound of the formula

$$F{-}SO_2{-}CH_2{-}CH_2{-}OH)_n$$

or a salt thereof in which F and n have the above meanings, by a sulfuric acid or sulfur trioxide agent, the improvement which comprises carrying out the reaction in a machine operating with a kneading action and with 1 to 5 times the equimolar amount, calculated on one mol of SO_3, of 92 to 100% strength sulfuric acid or sulfuric acid containing sulfur trioxide or sulfur trioxide itself.

4,315,866

PROCESS FOR PREPARING 11-KETO STEROIDS

Paul-Eberhard Schulze, and Ulrich Kerb, both of Berlin, Fed. Rep. of Germany, assignors to Schering, A.G., Berlin, Fed. Rep. of Germany

Filed Dec. 10, 1980, Ser. No. 215,761

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1979, 2950026

Int. Cl.[3] C07J *5/00*

U.S. Cl. 260—397.3 7 Claims

1. A process for preparing an 11-keto steroid consisting essentially of heating the corresponding 9α- halo-11β-hydroxy steriod to 180°-350° C. in an inert, aprotic, high-boiling solvent.

7. A process of claim 1 wherein the solvent is biphenyl, diphenylene oxide, dibenzylbenzene, an oligoglycol dimethyl ether or a poly-C_{4-8}-alkanediol dimethyl ether.

4,315,867

SECONDARY AND TERTIARY 2-CARBOXYETHYL- AND CARBOXYMETHYLPHOSPHINES AND THE SALTS THEREOF, AS WELL AS THEIR PREPARATION AND USE

Peter Hänssle, Haltern, Fed. Rep. of Germany, assignor to Chemische Werke Huels, Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Jan. 17, 1980, Ser. No. 112,754

Claims priority, application Fed. Rep. of Germany, Jan. 2, 1979, 2902202

Int. Cl.[3] C07F *15/00*

U.S. Cl. 260—439 R 4 Claims

1. In a nickel-containing catalyst for the oligomerization of ethylene wherein Ni is bonded to (a) a phosphine ligand, and also to (b) up to two other ligands which are a different phosphine, a phosphite, a phosphino alkylene, an arsine, a stibine, a bismuthine or an olefinically unsaturated compound of 2-20 carbon atoms, containing up to four olefinically unsaturated linkages and up to 3 carbocyclic rings

the improvement wherein said ligand (a) is a secondary or tertiary 2-carboxyethyl- or carboxymethylphosphine or a salt thereof, of the formula

$R{-}P(CH_2COOMe)_2$ or $R{-}P(CH_2{-}CH_2{-}COOMe)_2$

wherein

Me is hydrogen, an alkali metal or NR'_4 wherein R' is hydrogen, C_{1-10} alkyl or C_{6-14} aryl, and

R is hydrogen or a saturated or unsaturated, aliphatic or cycloaliphatic group of 1-20 carbon atoms and, for the 2-carboxyethylphosphines, also C_{6-14} aryl.

4,315,868

PROCESS FOR THE PREPARATION OF α-CYANOBENZYL ESTERS

Jacques Martel, Bondy; Jean Tessier, Vincennes; Jean-Pierre Demoute, Montreuil-sous-Bois, and Andre Teche, Nanterre, all of France, assignors to Roussel Uclaf, Paris, France

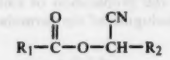
Division of Ser. No. 951,184, Oct. 13, 1978, Pat. No. 4,277,617. This application Oct. 3, 1980, Ser. No. 193,798

Claims priority, application France, Oct. 27, 1977, 77 32414; Oct. 27, 1977, 77 32415; Jul. 24, 1978, 78 21811; Jul. 24, 1978, 78-21812

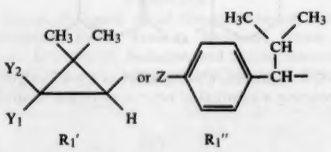
Int. Cl.[3] C07C *120/04, 121/66, 121/75*

U.S. Cl. 260—465 D 7 Claims

1. A process for the preparation of a compound of the formula

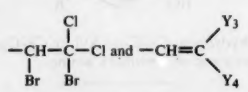


wherein R_1 is

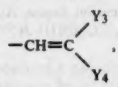


R_1' R_1''

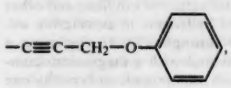
Y_1 and Y_2 may both be methyl or when Y_1 is hydrogen, Y_2 is selected from the group consisting of



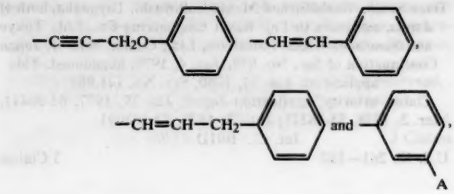
and Y_3 and Y_4 are individually selected from the group consisting of fluorine, bromine, chlorine, or the group consisting of hydrogen and methyl, Z is selected from the group consisting of hydrogen, fluorine, chlorine, bromine, alkyl of 1 to 4 carbon atoms and alkoxy of 1 to 4 carbon atoms, and when Y_1 and Y_2 are methyl or when Y_1 is hydrogen and Y_2 is



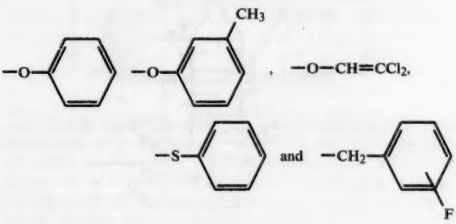
R_2 is selected from the group consisting of



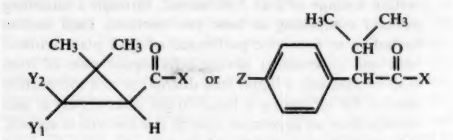
-continued



A— is selected from the group consisting of

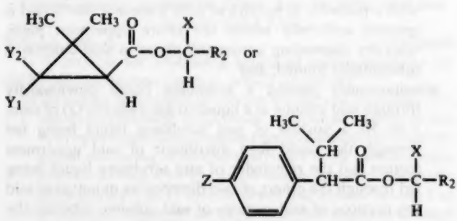


and when Y_1 is hydrogen and Y_2 is —CHBr—CCl_2Br, R_2 is m-phenoxyphenyl, the said acid moiety may be in the cis or trans form or mixtures thereof or optically active isomeric form or racemic mixtures thereof, comprising reacting in an anhydrous medium an acid halide of the formula



wherein Y_1 and Y_2 and Z have the above definition and X is selected from the group consisting of fluorine, chlorine and bromine with an aldehyde of the formula

wherein R_2 has the above definition in the presence of an acid catalyst to obtain a compound of the formula



that may be in one of two diastereoisomeric forms due to the existence of the asymetrical carbon atoms to which X is attached and reacting the obtained compound with a compound which generates CN^- ions to obtain the corresponding above compound.

4,315,869

PREPARATION OF α,β-UNSATURATED NITRILES

Franz Merger, Frankenthal; Hans-Martin Hutmacher, Ludwigshafen, and Helmut Hagen, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

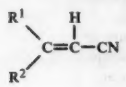
Filed Apr. 24, 1980, Ser. No. 143,446

Claims priority, application Fed. Rep. of Germany, May 16, 1979, 2919630

Int. Cl.³ C07C *120/10*

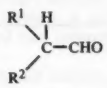
U.S. Cl. 260—465.2 **13 Claims**

1. A process for the preparation of α,β-unsaturated nitriles of the formula



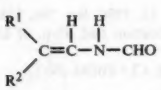
I

where R^1 and R^2 may be identical or different and each may be substituted or unsubstituted and each is alkyl of 1 to 7 carbons, cycloalkyl of 5 to 7 carbons, aralkyl or alkylaryl of 7 to 12 carbon atoms, aromatic, or piperidin-2-yl or R^1 and R^2 together with the adjacent carbon may also be members of a 5- to 6-membered alicyclic ring, and any of R^1 and R^2 may be substituted by alkyl or alkoxy of one to four carbon atoms, by first reacting, an aldehyde of the formula



II

where R^1 and R^2 have the above meanings, at a temperature from 40° to 150° C. with formamide in the presence of a catalytic amount of an inorganic acid, aromatic sulfonic acid and-/or halogen-substituted aliphatic carboxylic acid in the absence of an added solvent or in the presence of an organic non-alcoholic and non-aromatic solvent which is inert under the reaction conditions, after which, in a second step, the resulting N-alkenylformamide of the formula



III

where R^1 and R^2 have the above meanings, is passed, in the gas phase, over a dehydration catalyst at from 250° to 700° C.

4,315,870

PHOSPHORODIAMIDOTHIOATES

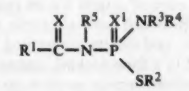
Janet Ollinger, Chalfont, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 5,937, Jan. 24, 1979, and Ser. No. 42,689, May 25, 1979. This application Dec. 11, 1979, Ser. No. 102,471

Int. Cl.³ C07F *9/24*; A01N *57/28, 57/30*

U.S. Cl. 260—947 **10 Claims**

1. A compound of the formula:



wherein

R^1 is a hydrogen atom;

an unsubstituted (C_1–C_6) alkyl group;

a (C_1–C_6) alkyl group substituted with up to three substituents selected from fluoro, chloro and bromo groups;

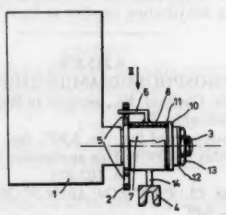
a (C_1–C_6) alkyl group substituted with one substituent selected from (C_1–C_4) alkoxy, (C_1–C_4) alkoxycarbonyl, and phenoxy groups;
a (C_3–C_6) alkenyl group;
a (C_4–C_{17}) alkyldienyl group;
a (C_3–C_6) cycloalkyl group;
a (C_1–C_4) alkoxycarbonyl group;
an unsubstituted phenyl group;
an unsubstituted phenyl (C_1–C_3) alkyl group;
an unsubstituted phenyl (C_2–C_6) alkenyl group;
a phenyl or phenyl (C_1–C_3) alkyl group; substituted with up to two substituents selected from nitro and chloro groups;
R^2 is a (C_2–C_4) alkyl group;
R^3 is a hydrogen atom,
a (C_1–C_3) alkyl group, or
a (C_1–C_3) alkenyl group;
R^4 is a hydrogen atom or
a (C_1–C_3) alkyl group;
R^5 is a hydrogen atom,
a (C_1–C_3) alkyl group or
a (C_1–C_3) alkenyl group; and
X and X^1 are an oxygen atom or a sulfur atom.

4,315,871

CARBURETOR CONTROL DEVICE FOR CARBURETORS IN INTERNAL-COMBUSTION ENGINES

Erwin Pape, Calberlah, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Feb. 13, 1980, Ser. No. 121,231
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1979, 2905911
Int. Cl.³ F02M *19/12*
U.S. Cl. 261—65 **7 Claims**



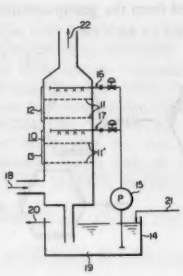
1. A carburetor control system for an internal combustion engine carburetor provided with a throttle valve and a shaft operating the valve, said system comprising a basic actuating member connected in a form-locking manner with respect to rotation, and at a defined angular position, to the throttle valve shaft, and a set of throttle valve levers having respectively different configurations, with one selected lever of said set being releasably connected to said basic actuating member without play for enabling the carburetor valve to be controlled by a respective actuating structure.

4,315,872

PLATE COLUMN

Teizo Senjo, Machida, and Makio Kobayashi, Toyonaka, both of Japan, assignors to Fuji Kasui Engineering Co., Ltd., Tokyo and Sumitomo Metal Industries, Ltd., Osaka, both of, Japan

Continuation of Ser. No. 878, Jan. 4, 1979, abandoned. This application Apr. 21, 1980, Ser. No. 141,982
Claims priority, application Japan, Jul. 29, 1977, 52-90411; Mar. 3, 1978, 53-26321; Jul. 28, 1978, 53-103091
Int. Cl.³ B01D *47/06*
U.S. Cl. 261—113 **3 Claims**



1. A process for removing a specific component from a gas comprising the steps of:

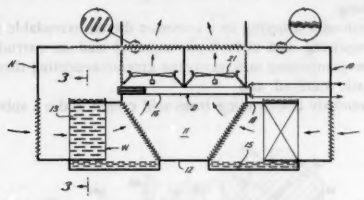
passing said gas upwardly, at a superficial gas velocity within a range of 2 to 7 m/second, through a scrubbing column comprising at least two sections, each section including at least one perforated or grid plate without weir and downcomer having a free-space ratio of from 0.30 to 0.60, and a liquid feed distributor at a top portion thereof for increasing a liquid-to-gas ratio (L/G) at said column from an uppermost section to a lowermost section, said free-space ratio of said at least one plate in each section increasing from said uppermost section to said lowermost section whereby pressure drop across each section is kept uniform despite the increase in liquid-to-gas ratio (L/G), said plates being supported by means of tray support beams which are fixed to a support post suspended in a center of said column, and said liquid feed distributor of each section up to but not including said uppermost section, being provided with a plurality of nozzles in such a manner that liquid is sprayed within a central area of each plate, said central area comprising about 10 to 50% of the total area of each plate, said liquid feed distributor of said uppermost section being provided with a plurality of nozzles in such a manner that liquid is sprayed uniformly across the entire uppermost plate, whereby channeling across the plates in said column is substantially limited; and

simultaneously passing a scrubbing liquid downwardly through said column at a liquid-to-gas ratio (L/G) of from 1 to 50, a portion of said scrubbing liquid being fed through the liquid feed distributor of said uppermost section and the remainder of said scrubbing liquid being fed through the others of said distributors mounted at said top portions of said sections of said column, wherein the gas in the lowermost portion is uniformly and countercurrently scrubbed with the total amount of scrubbing liquid and the gas in the uppermost section is uniformly and countercurrently scrubbed with only said portion the scrubbing liquid fed through the liquid feed distributor of the uppermost section whereby improved removal results.

4,315,873
COOLING EQUIPMENT

Ennis C. Smith, Houston, Tex., and Addison Y. Gunter, deceased, late of Gainesville, Tex. (by Ann R. Gunter, executrix), assignors to Hudson Products Corporation, Houston, Tex.

Continuation of Ser. No. 853,516, Nov. 21, 1977, abandoned. This application Dec. 27, 1978, Ser. No. 973,634
Int. Cl.[3] F28C *1/06*
U.S. Cl. 261—158 3 Claims



1. Cooling equipment, comprising a wet cooling tower section having an air inlet, an air outlet, fill intermediate the inlet and outlet, and means for distributing water over the fill so as to cool air as it flows through the wet tower section, a dry cooling tower section having an inlet, an air outlet, and a tube bundle through which a cooling medium may be passed and over which air is caused to flow in passing through the dry tower section so as to cool the medium, means for causing air to pass successively through said wet section, into the inlet of said dry section, and across the tube bundle thereof, a housing having a first portion enclosing the inlet to the wet section, a second portion enclosing the outlet from the dry section, a first opening connecting the first and second portions, a second opening to admit air to said first portion, a third opening to vent air from the second portion, and means for controlling the flow of air through said first, second and third openings, whereby the first opening may be closed and the second and third openings opened to cause the air passing successively through said wet section and across the tube bundle of the dry section to be vented from said dry section, or the second and third openings may be closed and said first opening opened to cause said air to be recirculated through the wet section and across the tube bundle of the dry section.

4,315,874
PROCESS FOR THE PRODUCTION OF SPHERICAL CARRIER PARTICLES FOR OLEFIN POLYMERIZATION CATALYSTS

Yoshihisa Ushida, Ohtake; Yoshikatu Amimoto, Iwakuni; Akinori Toyota, Iwakuni, and Norio Kashiwa, Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed Apr. 7, 1980, Ser. No. 137,641
Claims priority, application Japan, Apr. 11, 1979, 54/43002
Int. Cl.[3] B01J *2/00*
U.S. Cl. 264—5 7 Claims

1. A process for producing spherical carrier particles for olefin polymerization catalyst, which comprises

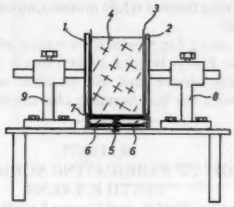
(i) forming a suspension of molten droplets of an adduct of a halogen-containing magnesium compound and an active hydrogen-containing organic compound selected from the group consisting of alcohols having 1 to 18 carbon atoms, phenols having 6 to 15 carbon atoms, organic carboxylic acids having 1 to 18 carbon atoms and amines having 1 to 16 carbon atoms, in an organic liquid medium selected from the group consisting of hydrocarbons, halogenated hydrocarbons, and ethers in the presence of at least one oil soluble surface-active agent as an auxiliary component, and

(ii) quenching the resulting suspension to solidify the adduct droplets.

4,315,875
PROCESS FOR MOLDING MINERALIC COMPONENTS WITH ORGANIC BINDERS

Helmut Hoedt, Bertramstrasse 69, 6000 Frankfurt 1, Fed. Rep. of Germany

Filed Apr. 7, 1980, Ser. No. 138,210
Claims priority, application Fed. Rep. of Germany, Aug. 22, 1979, 2933956
Int. Cl.[3] B06B *3/00*
U.S. Cl. 264—23 8 Claims



1. A process for molding an electrically non conductive solid mass body of a mineralic particulate component and a heat hardenable organic binder, comprising:

(a) mixing said heat hardenable organic binder with said mineralic component having a particle size of 0.05–6.0 mm,

wherein the binder content is sufficient, upon heating, to harden and to bond said component particles into a solid mass,

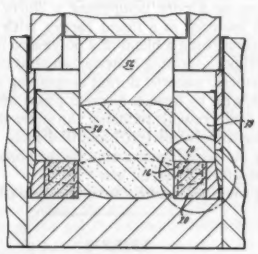
(b) filling a mold with said mixture, and

(c) heating said mixture in said mold by a dielectric heat source to harden said binder and form said solid mass body.

4,315,876
METHOD FOR HOT PRESS FORMING ARTICLES

Robert R. Baker, and Dale L. Hartsock, both of Livonia, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 31, 1979, Ser. No. 62,601
Int. Cl.[2] C04B *35/60*
U.S. Cl. 264—40.1 3 Claims



1. In a method for hot press forming both an outer facing circumferential surface of and an inner portion of a hub and of bonding that so-formed outer facing circumferential surface of the so-formed hub to an inner facing circumferential surface of a preformed outside ring thereby to form an article, the method being one in which the pre-formed outside ring is restrained by a restraining sleeve of ring-shaped cross-section having an inside diameter and wherein a die member used to engage the inside diameter of the restraining sleeve in a manner permitting relative movement therebetween, the improvement to achieve the best bond strength to minimize distortion and cracking of so-formed articles when the method is repeatedly used to form a series of articles, which method comprises the steps of:

forming several pairs of a matched restraining sleeve and die member with each matched pair having a predetermined diameter, said predetermined diameter being different from one another by stepped increments, the largest inside diameter of a restraining sleeve being equal to the diameter of the outer facing circumferential surface of the hub;

using each of said pair of said matched restraining sleeve and die member to form a sample of an article in which an inside hub is bonded to an outside ring;

evaluating said several formed samples to determine which sample has the best bond formed between the hub thereof and the ring thereof while minimizing any distortion of the ring; and

thereafter using for repeated formation of articles in which an inside hub is bonded to an outside ring that matched restraining sleeve and die member which formed the article with the best bonding characteristics.

4,315,877

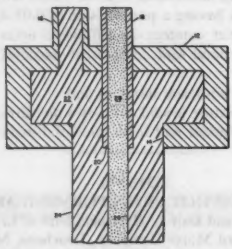
METHODS OF FABRICATING SORBENT-CORED TEXTILE YARNS

Myron J. Coplan, Natick, and George Lopatin, Newton, both of Mass., assignors to Albany International Corp., Albany, N.Y.

Division of Ser. No. 14,071, Feb. 22, 1979, abandoned. This application Jun. 6, 1980, Ser. No. 157,102

Int. Cl.[3] **B29D** *7/02*

U.S. Cl. 264—45.9 **19 Claims**



1. The method of forming textile yarn filaments including the steps of

cospinning through an orifice and a hollow needle therein and drawing a core comprising a slurry of particulate sorptive material in a liquid carrier with a surrounding sheath comprising a blend of a polymeric material and an open-cell pore-forming material which is compatible with the polymeric material during cospinning and incompatible therewith to form a discrete phase after leaving the orifice, said drawing reducing the outer diameter of the extrudate to between 0.001 and 0.01 inch,

extracting the pore-forming material to porosify the sheath of the resulting filament, and

extracting the liquid carrier from the core of the filament.

4,315,878

MANUFACTURE OF BLANKS FOR RECORDING DISCS UTILIZING COEXTRUSION AND BLANKS AND RECORDS MADE THEREBY

Dennis W. Van Dover, Monticello, and Richard C. Lindmark, Jr., Coon Rapids, both of Minn., assignors to H. B. Fuller Company, St. Paul, Minn.

Filed Jan. 14, 1980, Ser. No. 111,535

Int. Cl.[3] **B29C** *24/00;* **B29D** *17/00;* **B29F** *3/10;* **B32B** *27/08, 31/30*

U.S. Cl. 264—107 **12 Claims**

1. A coextruded recording disc blank comprising:

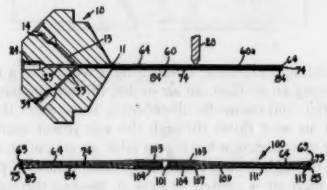
(a) a coextruded core layer comprising recycled thermoplastic vinyl polymer blended with 5 to 95% by weight of a filler having a particle size finer than 40 U.S. mesh prior to coextrusion, said coextruded core layer being of less than recording-grade quality in its ability to form high fidelity recording grooves,

(b) in adherent contact with each major surface of said coextruded core layer, a coextruded layer consisting essentially of sound recording-grade vinyl polymer.

2. In the manufacture of a layered record blank having a thickness at its thickest point which is greater than one millimeter and having a solid core comprising core material and, superposed upon and in adherent contact with a major surface of said core layer, a solid thermoplastic layer comprising recording groove-accepting thermoplastic material, the method comprising:

continuously bringing to a common die an extrudable flow comprising said core layer material and an extrudable flow comprising said recording groove-accepting thermoplastic material, and

continuously coextruding from said common die a substantially laminar flow which is thicker than about one millimeter and which comprises a first layer comprising said core material and, in adherent contact therewith, a second layer comprising said recording groove-accepting thermoplastic material, the adherence of said adherent contact resulting at least in part from said coextruding step.



9. The method of forming a record disc from the blank produced from the process of claim **1** comprising the steps of claim **1** plus the additional steps of:

(a) maintaining a coextruded record disc blank comprising a core layer and a recording groove-accepting thermoplastic surface layer in adherent contact with each major surface of said core layer at a temperature above the glass transition temperature of the said surface layers in said record disc blank, and

(b) impressing recording grooves in said coextruded record disc blank while said record disc blank is at a temperature above said softening point and below said melting point.

4,315,879

PROCESS FOR PREPARING STARTING MATERIALS TO FORM A CERAMIC COMPOSITION

Hans P. H. Pfuhl, Försterstr. 52; Dieter P. H. Agthe, Plössberger Weg 12, and Diethard G. Kreiner, Naturfreundestr. 2, all of 8672 Selb, Fed. Rep. of Germany

Filed Dec. 15, 1978, Ser. No. 970,065

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1977, 2756034

Int. Cl.[2] **B02B** *5/02;* **C04B** *33/02, 33/04*

U.S. Cl. 264—117 **9 Claims**

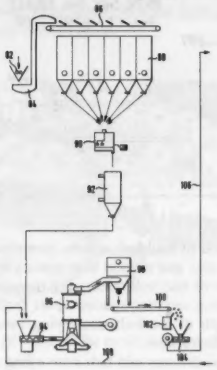
1. A process of producing mixed heterogeneous agglomerates of ceramic materials for ceramic compositions to be cast, kneaded or pressed, which agglomerates constitute wet interior portions enveloped by solid material dry at the surface, said heterogeneous agglomerates comprising about 6–25% water, the process comprising:

suspending finely ground ceramic starting materials in a gaseous stream and spraying the gaseous-solids mixture in a turbulent floating state uniformly over the cross-section of a spraying zone;

spraying droplets of dissolved or suspended recycling material constituting a water slurry of ceramic particles, from further processing of the ceramic composition, into said

spraying zone to contact said gaseous-solids mixture in the turbulent state;

thereby enveloping said droplets with said finely ground ceramic material and forming said mixed heterogeneous agglomerates having dry surfaces; and



maintaining the ratio of finely ground ceramic material to droplets of slurry to ensure that said heterogeneous agglomerates comprise about 6–25% water.

4,315,880

MANUFACTURE OF FIBROUS PRODUCTS

Uiltje J. Veenstra, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 73,357, Sep. 7, 1979, abandoned. This application May 1, 1980, Ser. No. 145,564

Claims priority, application United Kingdom, Sep. 12, 1978, 36525/78

Int. Cl.³ B29F *5/00*

U.S. Cl. 264—119 **5 Claims**

1. In the process for the manufacture of fibrous particles which comprises depositing on a surface a layer of powdery particles consisting at least to the extent of 50% by weight of thermoplastic resin and containing between 15 and 50 phr of a particulate inorganic filler having particle diameters in the range from 0.1 to 20 μm, maintaining the layer under sufficient heat for a sufficient length of time to form a sheet of partly fused particles, and drawing the sheet to convert it to a uniform fibrous web, the improvement of including in said layer from 0.1 to 5 phr of a compound $(R'—COO)_nR^2$ in which n has a value 1, 2 or 3, sufficient to satisfy the valence of R^2, R' is an aliphatic hydrocarbon group of 10 to 20 carbon atoms, and R^2 is a hydrogen atom or an atom of an alkali metal, alkaline earth metal or aluminum, or an organic radical.

4,315,881

PROCESS FOR PRODUCING COMPOSITE FIBERS OF SIDE BY SIDE TYPE HAVING NO CRIMP

Takayoshi Nakajima, Moriyamashi, and Susumu Tomioka, Shigaken, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Dec. 10, 1979, Ser. No. 102,134

Claims priority, application Japan, Dec. 20, 1978, 53/157880

Int. Cl.³ B29F *3/10*

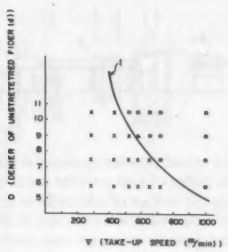
U.S. Cl. 264—171 **1 Claim**

1. In the production of side-by-side type composite fibers by way of composite melt-spinning of polypropylene and polyethylene as composite components in side-by-side manner, followed by stretching, the improvement which comprises:

(a) passing a melt of a crystalline polypropylene having an intrinsic viscosity of 1.45–2.15 and a melt of a high density polyethylene having an intrinsic viscosity of 0.85–1.05 into a spinnerette for the production of side-by-side type composite fibers;

(b) extruding said melts through the spinnerette so that the ratio by weight of said polypropylene component to said polyethylene component in the resulting side-by-side composite fiber is within the range of 40:60 to 60:40,

(c) taking up the resulting composite side-by-side fiber so as



to satisfy the following condition: $10{,}500 \geqq D \times V \geqq 5{,}139$ wherein V represents take-up speed in m/min and D represents the denier of the taken up unstretched composite fibers, and

(d) stretching the resulting composite side-by-side fibers to 3–5 times their original length at a temperature above 90° C. and below that at which the fibers melt-adhere to each other.

4,315,882

ELASTOMERIC SHAPED ARTICLE AND METHOD FOR PREPARING THE SAME

Motoki Hiratsuka, Nagoya; Chiaki Tanaka, Chita, and Nagayoshi Naito, Nagoya, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 31,312, Apr. 18, 1979, abandoned. This application Sep. 11, 1980, Ser. No. 186,407

Claims priority, application Japan, Apr. 21, 1978, 53-46468

Int. Cl.³ B29F *3/10*

U.S. Cl. 264—171 **7 Claims**

1. In a process for extrusion molding an elastomeric blockcopolyetherester comprised of from about 5% to 80% by weight of polyether soft segment and about 95% to 20% by weight of a polyester hard segment, said polyether soft segment being poly(butylene oxide) having an average molecular weight of about 300 to 6,000 and more than about 40 mol. % of said polyester hard segment being poly(butylene terephthalate), the improvement which compises the steps of mixing about 0.1 to 10 parts by weight of poly(butylene terephthalate) with about 100 parts by weight of a blockcopolyetherester at a temperature above about 200° C., whereby fine fragments of poly(butylene terephthalate), maintained in a crystalline phase, are dispersed in the matrix of the blockcopolyetherester, and then extrusion molding the mixture at a temperature below the melting point of the poly(butylene terephthalate).

4,315,883

METHOD FOR FORMING CORROSION-RESISTANT LAYER AND SURFACE ELECTRICALLY CONDUCTIVE LAYER ON CABLE

Takahiro Horikawa; Yutaka Hibino, and Seiichi Maki, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed May 23, 1980, Ser. No. 152,959

Claims priority, application Japan, May 25, 1979, 54-65146

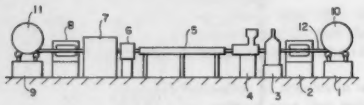
Int. Cl.³ B29F *3/10*; B05D *5/12*

U.S. Cl. 264—174 **9 Claims**

7. A method for forming a corrosion-resistant layer and a surface electrically conductive layer on a metal-sheathed cable comprising the steps of:

passing the cable, without heating it, through an extruder to form a corrosion-resistant polyethylene layer on the cable surface;

then, passing the cable through an accumulating tank containing mixed powder comprising electrically conductive powder and binder powder so that the mixed powder adheres to the corrosion-resistant layer of the cable;



pressing said mixed powder against the surface of said cable at a cable outlet of said powder accumulating tank; and

then, heating the surface of said cable to a temperature of 80° C. to 130° C. with a non-contacting heating device to melt said binder powder to cause said electrically conductive powder to firmly adhere to the corrosion-resistant layer of said cable.

4,315,884

PROCESS FOR THE PREPARATION OF SHAPED ARTICLES

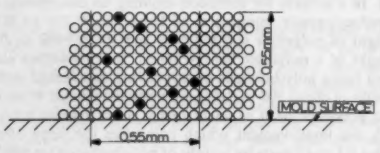
René L. E. Van Gasse, Opglabbeek, Belgium, assignor to Stamicarbon, B.V., Geleen, Netherlands

Filed Mar. 23, 1979, Ser. No. 24,435

Claims priority, application Netherlands, Mar. 25, 1978, 7803224

Int. Cl.³ B29D *9/00*; B29B *1/04*

U.S. Cl. 264—255 **5 Claims**



1. In a process for the preparation of a shaped article, comprising:

(a) coating at least part of the wall of a mold with a coating powder based on an unsaturated polyester resin,

(b) curing said coating powder to form a coating layer, and thereafter

(c) introducing a plastic thermosetting mass in the mold and

(d) curing the whole to a shaped article provided with a coating thereon,

the improvement wherein said coating powder applied in step (a) has been obtained by:

(1) forming a catalyst-containing powder by absorbing a liquid catalyst, or a solution of a catalyst in an inert solvent, in between 5 and 20% by weight of all unsaturated components in making up said coating powder;

(2) separately mixing the remaining components to make a mixture and grinding said mixture to about the same particle size as the catalyst-containing powder; and

(3) intimately mixing together the powders of (1) and (2).

4,315,885

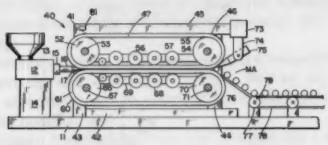
CONTINUOUS MOLDING APPARATUS AND METHOD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation of Ser. No. 813,795, Jul. 8, 1977, Pat. No. 4,165,960, which is a continuation-in-part of Ser. No. 744,505, Nov. 24, 1976, Pat. No. 4,162,757. This application Aug. 22, 1979, Ser. No. 68,611

Int. Cl.³ B29F *1/00*

U.S. Cl. 264—297 **8 Claims**



1. A method of molding article comprising the steps of:

providing first and second belt conveying means wherein at least one of said belt conveying means contains a plurality of molding cavities spaced apart from each other along the length of the belt conveying means and facing outwardly therefrom,

guiding and driving said belt conveying means in respective endless paths wherein at least a portion of the path of travel of each conveying means extends parallel to a similar portion of the other flexible belt conveying means,

compressing the parallelly extending portions of said first and second belt conveying means together to define a plurality of closed molding cavities therebetween, which cavities are formed at least in part of said spaced apart molding cavities provided between said belt conveying means,

intermittently injecting through an injection means a liquid molding material between said first and second belt conveying means when they are compressed together, wherein each injection takes place when a molding cavity is predeterminately disposed with respect to said injection means so as to intermittently fill each of the molding cavities defined therebetween after said belt conveying means have been compressed together,

solidifying said liquid molding material in said molding cavities to form a plurality of separate molded articles between said first and second belt conveying means while the two belt conveying means are compressed together,

driving said flexible belt conveying means apart beyond the portions thereof which extend parallel to each other after the material therebetween has solidified, and

removing the molded articles formed between said flexible belt conveying means from each of the cavities into which such material is injected after the flexible belt conveying means have been driven apart from each other.

4,315,886

FLEXIBLE PRINTING PLATE AND ATTACHMENTS THEREFOR

John C. Darnall, Thousand Oaks, Calif., assignor to The Times Mirror Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 478,826, Jun. 12, 1974, abandoned, and Ser. No. 652,836, Jan. 27, 1976, Pat. No. 4,136,150, which is a division of Ser. No. 449,662, Aug. 22, 1974, Pat. No. 3,986,698. This application Jun. 9, 1977, Ser. No. 804,930

The portion of the term of this patent subsequent to Jan. 23, 1996, has been disclaimed.

Int. Cl.³ B29F *1/00*

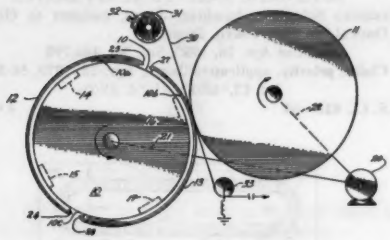
U.S. Cl. 264—318 **4 Claims**

1. A method for producing plastic printing plates comprising, in the order recited, the steps of:

forming a mold cavity having a material injection inlet, a first portion that defines a printing plate, and second and

third portions that define laterally extending cylinder lockup means at its ends, the second and third portions interconnecting with the first portion, one side of the cavity being formed by a matrix with printing depressions;

injecting a molten plastic material into the inlet of the formed mold cavity to form a molded plastic piece comprising a printing plate with cylinder lockup means in a one piece plastic construction;



opening the first portion of the mold cavity and releasing the printing plate; and

thereafter opening the second and third portions of the mold cavity and releasing the lockup means to release the molded plastic piece from the mold cavity as a press ready printing plate.

4,315,887

INJECTION MOULDING OF HIGH MOLECULAR POLYETHYLENE USING ELEVATED MOULD TEMPERATURE

Josef Kubát, Solsparksvägen 3, S-171 35 Solna; Hans M. Rigdahl, Klostergången 7, S-413 18 Göthenburg, and Jan K. Djurner, Viktoriagatan 8, S-411 25 Göthenburg, all of Sweden

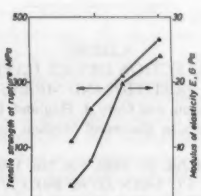
PCT No. PCT/SE79/00209, § 371 Date Jun. 20, 1980, § 102(e) Date Jun. 12, 1980, PCT Pub. No. WO80/00812, PCT Pub. Date May 1, 1980

PCT Filed Oct. 19, 1979, Ser. No. 199,514

Claims priority, application Sweden, Oct. 20, 1978, 7810976

Int. Cl.³ B29F *1/08*

U.S. Cl. 264—328.16 **6 Claims**



1. A process for producing a polyethylene article comprising injection molding a high molecular weight high density polyethylene in an injection mold at a pressure of more than 250 MPa in combination with conducting said injection molding at a mold temperature in the range of from 40° to 125° C. thereby producing an injection molded article exhibiting a high tensile strength, a low elongation at rupture and a high modulus of elasticity.

4,315,888

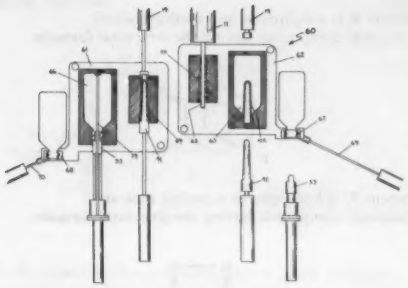
METHOD FOR FORMING A BLOWN THERMOPLASTIC ARTICLE

Robert X. Hafele, 5836 Vicksburg Dr., Baton Rouge, La. 70816

Filed Nov. 26, 1979, Ser. No. 97,230

Int. Cl.³ B29C *17/07*

U.S. Cl. 264—503 **13 Claims**



1. In a method of forming a blown thermoplastic article, the steps of:

(a) extruding an essentially tubular parison of thermoplastic material;

(b) closing the sections of a preform mold around the parison, thereby leaving at least one end of the parison open and enclosing the parison within a preform cavity;

(c) radially expanding the parison with a differential pressure in order to enlarge the parison to essentially the shape of the preform mold, and holding the enlarged parison against the preform mold to accommodate the insertion of a core pin;

(d) inserting a tapering core pin into the open end of the enlarged parison into essentially the entire length of the enlarged preform as formed in Step (c) and compressing the parison between the core pin and the preform cavity to form a preform;

(e) during the compression of Step (d), transferring heat through both the inner and outer walls of the preform between the mold cavity and the core pin to thermally condition the preform to within a desired range;

(f) opening the sections of the preform mold;

(g) closing the sections of a blow mold around the thermally conditioned preform and thereby enclosing the preform within a blow mold cavity; and then

(h) expanding the preform to the shape of the blow mold cavity.

4,315,889

METHOD OF REDUCING LEACHING OF COBALT FROM METAL WORKING TOOLS CONTAINING TUNGSTEN CARBIDE PARTICLES BONDED BY COBALT

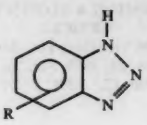
John M. McChesney, Huntington, W. Va., and Perry E. Landers, Russell, Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Dec. 26, 1979, Ser. No. 106,500

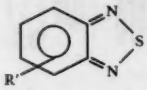
Int. Cl.³ C23F *11/14, 11/16;* C10M *1/06*

U.S. Cl. 422—7 **12 Claims**

1. A method for reducing the leaching of cobalt from a surface through exposure of said surface to agents capable of leaching cobalt, comprising contacting a surface containing cobalt with a liquid composition containing a compound selected from the group consisting of triazole compounds having the structural formula:



wherein R is a hydrogen or a methyl radical;
thiadiazole compounds having the structural formula:



wherein R′ is hydrogen or a methyl radical;
thiadiazole compounds having the structural formula:

wherein R″ is hydrogen or sodium;
di-(triethanolammonium) dimercapto-thiadiazole; and mixtures thereof wherein said compound is present in an amount effective to reduce the leaching of cobalt.

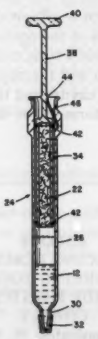
4. The method of claim 1, wherein said compound is tolyltriazole.

5. The method of claim 1, wherein said compound is 2,1,3-benzothiadiazole.

4,315,890
DEVICE FOR THE IDENTIFICATION OF VOLATILE FLUIDS

Murry A. Tamers, Hialeah, Fla., assignor to Interscl Corporation, Miami, Fla.

Filed May 1, 1980, Ser. No. 145,447
Int. Cl.³ G01N *1/22, 21/29, 31/22*
U.S. Cl. 422—58 **11 Claims**



1. A naturally volatile substance identification device comprising:

a. a container for receiving a solid or liquid specimen and;

b. detecting means within the container spaced from the bottom of the container, said detecting means including:

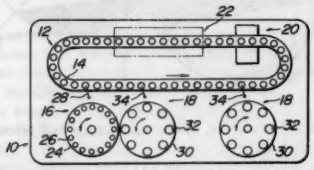
i. an inert absorbant element, contained within an inert transparent tube and having a liquid or solid reagent retained thereon, which reacts with a naturally volatile component of the liquid or solid specimen; and

ii. means for supporting said absorbant element in its tube in spaced relation from the bottom of the container whereby vapor emitted from the liquid or solid specimen at the bottom of the container contacts the reagents to provie a visual indication thereof, but the bulk specimen does not come in contact with the reagents.

4,315,891
AUTOMATIC ANALYTICAL APPARATUS

Masahiko Sakurada, Machida, Japan, assignor to Olympus Optical Co. Ltd., Tokyo, Japan

Filed Apr. 16, 1980, Ser. No. 140,795
Claims priority, application Japan, Apr. 28, 1979, 54-52895
Int. Cl.³ G01N *35/04, 35/06*
U.S. Cl. 422—64 **4 Claims**



1. In an automatic analytical apparatus comprising a single reaction line, reaction vessels arranged along the reaction line and operative to be carried in a stepwise manner, a sample delivering station for delivering a sample into the reaction vessel during an interval between successive carrying steps, a reagent delivering station for delivering a reagent corresponding to a measurement item into the reaction vessel to form a test liquid during the interval between the successive carrying steps, and a photometering station for subjecting the test liquid to a photometric operation, the improvement comprising:

(a) sample and reagent delivering means for delivering at least one kind of sample and at least one kind of reagent into respective reaction vessels of a group consisting of a plurality of successive reaction vessels during an interval between successive carrying steps during each of which said group of the plurality of reaction vessels are carried along said single reaction line, and

(b) means comprising the plurality of photometers arranged along said single reaction line for photometering the test liquids contained in said plurality of the successive reaction vessels at the same time during said interval between the successive carrying steps.

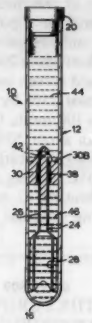
4,315,892
FLUID COLLECTION DEVICE HAVING PHASE PARTITIONING MEANS

Glen Stone, O'Fallon, and Gary J. Haglund, Creve Coeur, both of Mo., assignors to Sherwood Medical Industries, Inc., St. Louis, Mo.

Filed Jul. 18, 1980, Ser. No. 170,222
Int. Cl.³ G01N *33/48;* B01D *21/26*
U.S. Cl. 422—101 **19 Claims**

1. A fluid collection device for receiving a liquid centrifugally separable into relatively low and high density phases and for providing a partition between the separated phases comprising a collection container for receiving the liquid to be separated, and phase partitioning means in said container including a housing, and gel-like sealant in said housing having a specific gravity between the specific gravities of the separated low and high density phases and flowable to a location between the separated phases during centrifugation to form a semi-rigid partition therebetween, and valve means on said

housing responsive to a predetermined degree of phase separation during centrifugation of the device to open and allow the



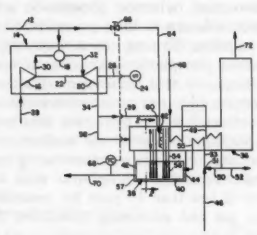
flow of said sealant from said housing into said liquid and toward said location between the separated phases.

4,315,893

REFORMER EMPLOYING FINNED HEAT PIPES

Robert A. McCallister, Mountain Lakes, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Dec. 17, 1980, Ser. No. 217,363
Int. Cl.³ G05D *23/00;* B01J *8/00*
U.S. Cl. 422—109 **14 Claims**



1. An apparatus for producing synthesis gas including carbon monoxide and hydrogen, said apparatus comprising:

(a) a first chamber adapted to receive a heated fluid,

(b) a second chamber spaced apart from said first chamber and adapted to receive a stream including fluid hydrocarbon and steam, said stream being at a temperature lower than the temperature of said heated fluid,

(c) a plurality of heat pipes disposed between said first and second chamber, a first portion of said heat pipes extending within said first chamber, a second portion of said heat pipes extending within said second chamber,

(d) a catalyst material disposed within said second chamber, said steam reacting with said fluid hydrocarbon when in the presence of said catalyst to yeidl said synthesis gas,

(e) means for introducing said heated fluid into said first chamber,

(f) means for introducing said stream to said second chamber, and

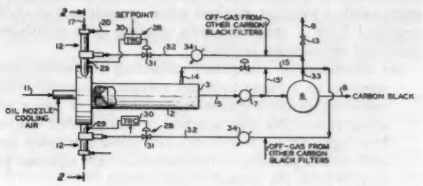
(g) means for removing said synthesis gas from said second chamber.

4,315,894

METHOD AND APPARATUS FOR PRODUCING CARBON BLACK

Oliver K. Austin, Bartlesville, Okla., assignor to Phillips Petroleum Co., Bartlesville, Okla.

Division of Ser. No. 848,251, Nov. 3, 1977, Pat. No. 4,206,192.
This application Dec. 28, 1979, Ser. No. 108,210
Int. Cl.³ C01B *31/02;* C09C *1/48*
U.S. Cl. 422—151 **19 Claims**



1. An apparatus for producing carbon black including:

a reactor defining a reaction chamber having an outlet;

charging means opening into said reaction chamber operable for introducing a make hydrocarbon into said reaction chamber;

separating means operably connected to said outlet operable for receiving smoke containing carbon black and gas, and substantially separating the smoke into carbon black product and a gas stream;

combustion gas injection means opening into the reaction chamber and operable for introducing hot combustion gases into the reaction chamber, said combustion gas injection means defining a combustion chamber opening into the reaction chamber with the combustion chamber being directed to introduce combustion gases into the reaction chamber in a generally tangential direction with respect to the reaction chamber, first fluid inlet means opening into said combustion chamber operable for introducing a combustible fuel and an oxygen-containing gas into said combustion chamber, second fluid inlet means opening into said combustion chamber and directed for introducing quench fluid into said combustion chamber at a position intermediate said first fluid inlet means and said reaction chamber; and

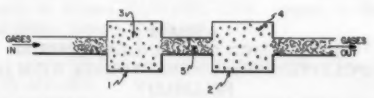
supply means connecting said second fluid inlet means to a source of quench fluid.

4,315,895

METHOD AND APPARATUS FOR PURIFICATION OF EXHAUST GASES

Henry C. Bramer, Venetia, and Edward Shapiro, Pittsburg, both of Pa., assignors to Pittsburgh Environmental and Energy Systems, Inc., Pleasantville, Pa.

Division of Ser. No. 605,558, Aug. 18, 1975, Pat. No. 4,041,128.
This application Dec. 3, 1976, Ser. No. 747,225
Int. Cl.³ F01N *3/28*
U.S. Cl. 422—171 **10 Claims**



1. A device for the removal of carbon monoxide, sulfur and nitrogen oxides from internal combustion engine exhaust which comprises a chamber which is a tubular conduit in which said exhaust enters at one end and exits at the other end containing a sulfide and an oxide of a metal or metals selected from the group consisting of iron, copper and zinc.

4,315,896

RECOVERY OF MOLYBDENUM AS AN AQUEOUS SOLUTION FROM SPENT CATALYST

Paul D. Taylor, Flemington, and Michael T. Mocella, East Windsor, both of N.J., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jan. 21, 1981, Ser. No. 226,967
Int. Cl.[3] C01G *39/00*
U.S. Cl. 423—54 10 Claims

1. In the process of separating and recovering dissolved molybdenum by extraction from a molybdenum-containing spent catalyst solution obtained when epoxide and alcohol are removed from a crude reaction mixture of a molybdenum catalyzed epoxidation reaction,

the improvement comprises subjecting the spent catalyst solution to a liquid-to-liquid solvent extraction with an extracing medium consisting essentially of water and a water immiscible hydrocarbon or halogenated hydrocarbon organic solvent to form a two phase extraction system and then separating a molybdenum-rich aqueous phase extract from the organic phase extract.

4,315,897

STABILIZED RED PHOSPHORUS AND PROCESS FOR ITS MANUFACTURE

Horst Staendeke, Erftstadt; Wilhelm Adam, Neuisenburg; Franz-Josef Dany, and Joachim Kandler, both of Erftstadt, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 10, 1980, Ser. No. 205,627
Claims priority, application Fed. Rep. of Germany, Nov. 8, 1979, 2945118
Int. Cl.[3] C01B *25/01, 25/02, 25/04*
U.S. Cl. 423—274 10 Claims

1. An improved stabilized pulverulent red phosphorus consisting of phosphorus particles having a particle size of at most about 2 mm, and an oxidation stabilizer enveloping the phosphorus particles in the form of a thin layer, the improved phosphorus containing

(a) as the oxidation stabilizer a combination of aluminum hydroxide and a hardened epoxide resin system having an epoxide equivalent weight of about 170 to 500,

(b) the oxidation stabilizer in a total proportion of 0.1–5% by weight, based on the amount of red phosphorus, and

(c) the aluminum hydroxide in a proportion of about 0.01 to 3% by weight, and the epoxide resin in a proportion of about 0.09 to 4.99% by weight, based in each case on red phosphorus.

5. A process for the manufacture of the stabilized pulverulent red phosphorus, consisting of phosphorus particles having a particle size of at most about 2 mm, and an oxidation stabilizer which envelops the phosphorus particles in the form of a thin layer, which comprises introducing a water-soluble aluminum salt and an aqueous or alcoholic solution or dispersion of an epoxide resin and of a hardener into an aqueous suspension of the red phosphorus, establishing a pH-value of about 5 to 9, stirring the mixture for 1 to 3 hours at a temperature of 20° to 90° C., with precipitation of the aluminum hydroxide and simultaneous hardening of the epoxide resin, filtering off the stabilized phosphorus and finally drying it at an elevated temperature.

4,315,898

PREPARATION OF GRANULAR SODIUM TRIPOLYPHOSPHATE HEXAHYDRATE WITH LOW FRIABILITY

Charles W. Lutz, Princeton, N.J., assignor to FMC Corportion, Philadelphia, Pa.

Filed Jun. 30, 1980, Ser. No. 164,626
Int. Cl.[3] C01B *25/30*
U.S. Cl. 423—315 15 Claims

1. A process for the production of granular sodium tripolyphosphate hexahydrate having low friability and a bulk density within the range of from about 0.59 g/cc to about 0.64 g/cc, which comprises moisturizing screen undersize anhydrous sodium tripolyphosphate particles with from about 145% to about 185% by weight of the theoretical quantity of water necessary to produce sodium tripolyphosphate hexahydrate, said screen undersize anhydrous sodium tripolyphosphate particles containing at least about 2 weight percent of an alkali metal pyrophosphate, said screen undersize particles having a size distribution of at least 25% by weight −100 mesh, 0 to 65% by weight −50 +100 mesh, 0 to 10% by weight +50 mesh and not more than about 50% by weight −270 mesh, agitating the material being moisturized so as to keep the temperature below about 80° C., drying the moisturized material at a temperature below about 80° C. to remove most of the free moisture, and recovering granular sodium tripolyphosphate hexahydrate.

4,315,899

PROCESS FOR THE PURIFICATION OF WET PHOSPHORIC ACID

Armand Mamourian, Ales, and Francois Bousquet, Paris, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Continuation of Ser. No. 908,819, May 23, 1978, abandoned. This application Aug. 13, 1979, Ser. No. 66,222
Claims priority, application France, May 23, 1977, 77 15623
Int. Cl.[3] C01B *25/16*
U.S. Cl. 423—321 R 10 Claims

1. A process for the purification, concentration and defluorination of a crude aqueous solution of wet-process phosphoric acid obtained via the sulfuric acidulation of phosphate rock, to obtain a food grade phosphoric acid characterized by an F/P_2O_5 ratio of less than 10 ppm, consisting essentially of (i) countercurrently liquid-liquid extracting such crude wet-process phosphoric acid with a liquid solvent consisting essentially of an alkyl derivative of phosphoric acid in a first extraction zone consisting of a plurality of stages, while concomitantly introducing strong sulfuric acid to an intermediate stage of said first extraction zone, whereby phosphoric acid is removed from the crude solution to form an extracted aqueous phosphoric acid solution; (ii) next countercurrently washing said solvent-extracted phosphoric acid solution with an aqueous solution of phosphoric acid in a second extraction zone to form a washed extract; (iii) next countercurrently water washing said washed extract in a third extraction zone to phase separate the aqueous phosphoric acid in said washed extract from said liquid solvent; and (iv) thence concentrating and defluorinating said phase separated phosphoric acid solution to an F/P_2O_5 level of less than 10 ppm by contacting same with steam or hot gas and entraining volatilized fluorine values therein.

4,315,900

INTEGRATED PROCESS FOR THE PRODUCTION OF METHANOL AND AMMONIA

Shinkichi Nozawa, Funabashi, and Kenjiro Miyashita, Chiba, both of Japan, assignors to Toyo Engineering Corporation, Tokyo, Japan

Filed Oct. 6, 1980, Ser. No. 193,905
Claims priority, application Japan, May 18, 1979, 54/60272
Int. Cl.[3] C01C *1/04*
U.S. Cl. 423—359 12 Claims

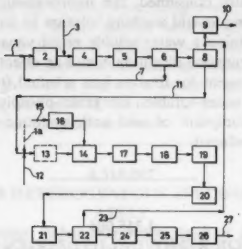
1. An integrated process for the production of methanol and ammonia which comprises the steps of

(a) subjecting a gaseous hydrocarbon feed to primary reforming with steam in the presence of a hydrocarbon reforming catalyst to produce a methanol synthesis gas containing hydrogen and carbon monoxide;

(b) subjecting the methanol synthesis gas to methanol synthesis and then separating from the resulting methanol a purge gas containing hydrogen, carbon monoxide, carbon dioxide and methane;

(c) subjecting the purge gas to secondary reforming with steam and an oxygen-containing gas to produce an ammonia synthesis gas containing hydrogen, carbon monoxide, carbon dioxide and nitrogen;

(d) subjecting the ammonia synthesis gas to high temperature shift conversion and thereby converting carbon monoxide into hydrogen and carbon dioxide;



(e) passing the carbon monoxide-impoverished ammonia synthesis gas through a series of steps required for the removal of carbon oxides; and

(f) subjecting the resulting carbon monoxide-free ammonia synthesis gas to ammonia synthesis.

4,315,901

PROCESS FOR PRODUCING CARBON BLACK

Paul J. Cheng, and King L. Mills, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 24, 1980, Ser. No. 171,923

Int. Cl.³ C01B *31/02;* C09C *1/48*

U.S. Cl. 423—455 **14 Claims**

1. In a process for producing carbon black in a vortex flow, oil furnace reactor comprising a generally cylindrical zone having a radius of between about 15 inches and about 27 inches, a generally frustoconical zone in axial alignment with and converging away from the generally cylindrical zone from an inlet to an outlet, and at least one combustion tunnel communicating generally tangentially with the generally cylindrical zone, wherein combustion gases are introduced into the generally cylindrical zone from the at least one combustion tunnel, and wherein a carbon black forming feedstock is introduced into the reactor from a position on the axis of the generally cylindrical zone for pyrolysis by the combustion gases to form carbon black,

the improvement comprising

introducing the combustion gases at a rate of between about 30 and about 80 percent of a rate calculated from the relationship $11{,}900r^{2.3}$, wherein r is the radius in inches of the outlet of the generally frustoconical zone and the calculated rate is measured as at standard temperature and pressure based on the rates as at standard temperature and pressure at which combustible fluid and combustion supporting gases are introduced into the at least one combustion tunnel to form the combustion gases, so as to produce a carbon black having a tint residual of about −5 or less.

8. A process for producing carbon black having a tint residual 00–5 or less in a reactor characterized by

(i) a first generally cylindrical zone having a radius of between about 15 and about 27 inches and a length of between about 14 and about 32 inches;

(ii) a pair of tunnels emptying generally tangentially into the generally cylindrical zone in an opposed, corotational direction, each tunnel having a radius of between about 6 and 16 inches and a restriction having a radius of between about 3 and about 10 inches;

(iii) a first generally frustoconical zone connected to, in axial alignment with, and converging away from the first generally cylindrical zone from an inlet to an outlet, the inlet of the first frustoconical zone being adjacent the first generally cylindrical zone and having a radius of between about 8 and about 27 inches, the length of the first generally frustoconical zone being between about 10 and about 25 inches;

(iv) a second generally cylindrical zone connected to, in axial alignment with, and extending away from the outlet of the first generally frustoconical zone from an inlet to an outlet, the second generally cylindrical zone having a radius the same as the radius at the outlet of the first generally frustoconical zone, the radius of the second generally cylindrical zone being between about 4 inches and about 8 inches and the length of the second generally cylindrical zone being between about 4 and about 13 inches;

(v) a second generally frustoconical zone connected to, in axial alignment with, and diverging away from the outlet of the second generally cylindrical zone from an inlet to an outlet, the radius of the inlet of the second generally frustoconical zone being the same as the radius of the second generally cylindrical zone, the second generally frustoconical zone having an outlet with a radius of between about 10 and about 19 inches and a length of between about 60 and about 110 inches;

(vi) a third generally cylindrical zone connected to, in axial alignment with, and extending away from the outlet of the second generally frustoconical zone, the third generally cylindrical zone having a radius of between about 10 and about 19 inches;

said process comprising:

(a) flowing a mass of combustion gases through the pair of tunnels, through at least a portion of the first generally cylindrical zone, and through the first frustoconical zone, the second generally cylindrical zone, the second frustoconical zone, and the third generally cylindrical zone at a calculated rate of from about 30 to about 70 percent of the calculated rate expressed in standard cubic feet per hour given by the equation:

$$\text{rate} = 11{,}900r^{2.3},$$

wherein r is the radius of the second generally cylindrical zone in inches;

(b) introducing a carbon black feedstock having a BMCI value of between about 85 and about 160 axially into the first generally cylindrical zone as a cone-shaped spray diverging toward the first generally frustoconical zone at a rate sufficient to maintain a ratio of air employed to form the mass of combustion gases to feedstock in standard cubic feet per gallon of between about 700:1 to about 1200:1;

(c) pyrolyzing at least a portion of the feedstock with the combustion gases to form an effluent containing particulate carbon black;

(d) quenching the effluent with a quenching fluid; and

(e) collecting at least a portion of the particulate carbon black from the effluent.

4,315,902

METHOD FOR PRODUCING CARBON BLACK

Meredith N. Dilbert, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 7, 1980, Ser. No. 119,269

Int. Cl.³ C01B *31/02;* C09C *1/48*

U.S. Cl. 423—456 **7 Claims**

1. A method for producing carbon black having a tint residual of 7 or greater in an apparatus comprising:

an upstream end;

a downstream outlet;

means defining a flow path connecting the upstream end in flow communication with the downstream outlet, said means comprising a precombustion chamber having an

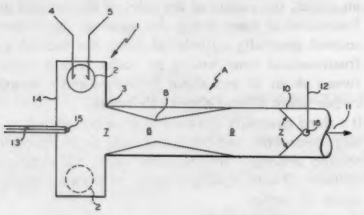
upstream end comprising the upstream end of the carbon black reactor, and a downstream opening;

feed inlet means for introducting a hydrocarbon feed into the means defining a flow path at an injection distance measured from the downstream opening of the precombustion chamber;

air and fuel tangential inlet means for introducing air and fuel generally tangentially into the precombustion chamber;

axial prequench inlet means for introducing prequench fluid into the means defining a flow path in a generally conical hollow diverging pattern generally coaxially with a longitudinal axis of the means defining a flow path and in an upstream direction having an included angle effective to produce a positive tint residual black having a positive tint residual of 7 or greater;

said method comprising:



introducing air and fuel tangentially into the precombustion chamber;

reacting the thus tangentially introduced air and fuel to produce swirling combustion gases;

introducing a feed hydrocarbon into the combustion gases in the means defining a flow path at said injection distance;

reacting the thus introduced feed hydrocarbon with the combustion gases to produce a reacting mixture;

flowing the thus produced reacting mixture along a flow axis of the means defining a flow path from the upstream end of the precombustion zone to a downstream outlet;

quenching the reacting mixture by spraying a prequench fluid by said prequench means into the reacting mixture in a generally axial upstream direction, said prequench fluid being sprayed in a generally conically diverging hollow spray pattern.

4,315,903

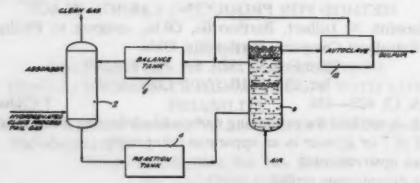
REDUCING THE CONSUMPTION OF ANTHRAQUINONE DISULFONATE IN STRETFORD SOLUTIONS

Donald M. Fenton, Anaheim, and Raoul P. Vaell, Los Angeles, both of Calif., assignors to Union Oil Company of California, Calif.

Division of Ser. No. 579,311, May 21, 1975, Pat. No. 4,060,594. This application Sep. 6, 1977, Ser. No. 830,575

Int. Cl.[3] C01B *17/05;* B01D *53/34*

U.S. Cl. 423—573 R **5 Claims**



1. In the process for treating a hydrogen sulfide-containing hydrogenated Claus process tail gas to convert the hydrogen sulfide to elemental sulfur in which said gas is contacted with an aqueous alkaline washing solution containing a water-soluble metal vanadate and a water-soluble anthraquinone disulfonate to yield an effluent gas of reduced sulfur content, the solution is thereafter regenerated by contact with an oxygen-containing gas, elemental sulfur is recovered from said solution, and said regenerated solution is recycled to said gas-contacting step, and in which said anthraquinone disulfonate is being chemically consumed, the improvement which comprises employing as said washing solution an aqueous alkaline solution containing a water-soluble metal vanadate, a water-soluble anthraquinone disulfonate, and an effective amount of a complexing agent for ferrous ions selected from the group consisting of water-soluble, inorganic phosphates, whereby chemical consumption of said anthraquinone disulfonate is substantially reduced.

4,315,904

PROCESS FOR REMOVING HYDROGEN SULPHIDE AND SULPHUR DIOXIDE FROM CLAUS TAIL GASES

Rainer Lell, Kerpen; Ghazi R. Al-Muddarris, Cologne, and Reinhard Pachaly, Kerpen, all of Fed. Rep. of Germany, assignors to Davy International Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jun. 12, 1980, Ser. No. 158,903

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1979, 2923895

Int. Cl.[3] C01B *17/02*

U.S. Cl. 423—574 R **18 Claims**

1. A process for removing hydrogen sulphide and sulphur dioxide from Claus tail gases comprising separating the Claus tail gases into a first and second partial streams, conducting the first partial stream at a temperature above the sulphur dew point through a first catalyst bed charged with sulphur, cooling the first partial stream containing sulphur discharged in vapor form from the first catalyst bed to a temperature below the sulphur dew point for condensation of the sulphur, separating the condensed sulphur from the first partial stream, combining the first partial stream with the second partial stream, conducting the combined partial streams at a temperature below the sulphur dew point through a second catalyst bed freed previously from sulphur, and reversing the direction of flow of the gas streams through the catalyst beds when the first catalyst bed is freed from sulphur and the second catalyst bed is charged with sulphur.

4,315,905

PROCESS FOR PRODUCING AN ELECTRONICALLY CONDUCTIVE OXIDIZER MATERIAL

Everett M. Bens, and Aaron N. Fletcher, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 30, 1980, Ser. No. 164,449

Int. Cl.[3] C01G *31/02*

U.S. Cl. 423—592 **4 Claims**

1. A method of producing an electrically conductive oxidizer cathode material for use in thermal batteries consisting of:

heating vanadium pentoxide, V_2O_5, to a temperature in the range from about 400° C. to about 550° C.;

treating said heated V_2O_5 with a reducing gas flowing at a rate from about 8.2 to 55 milliliters per minute for about 2 hours to 10 days until no water condenses at room temperatures reducing said V_2O_5 to produce a reduced electrically conductive oxidizer;

recovering said reduced product; and

sintering said recovered product to V_2O_5.

4,315,906

COLD INSOLUBLE GLOBULIN, ITS PURIFICATION AND USE

Frank B. Gelder, Shreveport, La., assignor to New England Nuclear Corporation, Boston, Mass.

Filed May 21, 1979, Ser. No. 40,995
Int. Cl.[3] A61K *49/00, 43/00;* C07G *7/00*
U.S. Cl. 424—1 36 Claims

25. A method for in vivo visualizing a site of thrombi or tissue damage in a higher animal, said method comprising injecting said animal with a radiopharmaceutical preparation containing radiolabelled cold insoluble globulin, localizing the cold insoluble globulin at said site of thrombi or tissue damage, and visualizing said site of thrombi or tissue damage with radioscintigraphic imaging apparatus.

4,315,907

COMBINED HETEROGENEOUS SPECIFIC BINDING ASSAY

Bertold Fridlender; Zohar Ben-Moyal, both of Jerusalem; Udi Olshevsky, Ramat-Gan, and Regine Tirosh, Jerusalem, all of Israel, assignors to Ames-Yissum, Jerusalem, Ill.X

Filed Oct. 29, 1979, Ser. No. 89,269
Claims priority, application Israel, Oct. 30, 1978, 551816
Int. Cl.[3] G01N *33/56, 33/58*
U.S. Cl. 424—1 37 Claims

1. A specific binding assay method for the simultaneous determination of each of a plurality of different ligands in a single liquid test sample, comprising the steps of:

(a) forming a single reaction mixture comprising said sample and, corresponding to each different ligand to be determined, a labeled binding agent and a solid-phase binding agent, the label being the same for all such labeled binding agents and the solid-phase binding agent for each different ligand to be determined being differentially separable from the other solid-phase binding agents for the other ligands to be determined, whereby there is formed in said single reaction mixture, for each corresponding ligand to be determined, a binding reaction system having a solid-phase bound-species and a free-species of its respective labeled binding agent, the amount of said label resulting in each resulting solid-phase bound-species being a function of the presence or amount of the corresponding ligand in said sample;

(b) separating each resulting solid-phase bound-species from the other solid-phase bound-species and from all of the remaining free-species;

(c) measuring the amount of label in each such separated solid-phase bound-species; and

(d) relating each such measured amount of label to the presence or amount of each of the corresponding different ligands in said sample.

4,315,908

METHOD OF DETERMINING HUMAN CHORIONIC GONADOTROPIN (HCG) IN THE URINE

Tamar Zer, and Avraham Zer, both of 26 Burla St., Jerusalem, Israel

Filed Dec. 3, 1979, Ser. No. 100,015
Claims priority, application Israel, Dec. 29, 1978, 56342
Int. Cl.[3] G01N *33/56, 33/48*
U.S. Cl. 424—1 9 Claims

1. A method of analyzing urine to determine the presence or absence therein of human chorionic gonadotropin which comprises contacting the urine to be tested with an absorbent body which absorbs said urine and with it human chorionic gonadotropin that may be contained therein, contacting said absorbent body containing the absorbed urine with serum from a non-pregnant mammal to extract the urine from said body into the serum, and subjecting the thus obtained serum containing the extracted urine to radioimmunoassay for the determination of any human chorionic gonadotropin contained therein.

4,315,909

PROCESS FOR THE PREPARATION OF SOLID DRUG FORMULATIONS

Reinhard Hüttenrauch, Jena, German Democratic Rep., assignor to Veb Jenapharm, Jena, German Democratic Rep.

Continuation-in-part of Ser. No. 78,200, Sep. 24, 1979, abandoned. This application Oct. 3, 1979, Ser. No. 81,449
Claims priority, application German Democratic Rep., Sep. 25, 1978, 208050
Int. Cl.[3] A61K *9/34*
U.S. Cl. 424—35 5 Claims

1. In a process for preparing solid drug formulations, including dosage unit amounts of an active agent and adjuvant, the improvement comprising using a cellulose graft copolymer as 30–100% of said adjuvant.

4,315,910

AEROSOL HAIR SPRAY COMPOSITIONS

Frank A. Nowak, Jr., Somerville, and Albert L. Micchelli, Middletown, both of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Continuation-in-part of Ser. No. 776,786, Mar. 11, 1977, abandoned. This application Sep. 5, 1978, Ser. No. 939,644
Int. Cl.[3] A61K *7/11*
U.S. Cl. 424—47 7 Claims

1. Aerosol hair spray compositions in aerosol metal containers comprising 0.5 to 5% of at least one hair spray resin selected from the group consisting of:

(A) a carboxylated organic vinyl polymer containing:

(i) 5–55 mole percent acidic monomer selected from the group consisting of maleic acid, maleic anhydride, acrylic acid, methacrylic acid, fumaric acid, itaconic acid, maleic half esters, fumaric half esters, crotonic acid, aconitic acid, allyl acetic acid, allyl arsonic acid, 2-allyl oxypropionic acid, β-benzoyl acrylic acid, N-n-butyl maleamic acid, N-ethyl maleamic acid, N-methyl maleamic acid, N,N-carboxyl-substituted maleamides, 2-furfuryl acrylic acid, 2-vinyl propionic acid, vinyl acetic acid, sorbic acid, dihydroxy maleic acid and mixtures thereof;

(ii) 95–45 mole percent of at least one monomer selected from the group consisting of:

(a) styrene and derivatives thereof;

(b) methacrylate and acrylate alkyl esters wherein the alkyl group contains 1 to 18 carbon atoms,

(c) vinyl esters of the formula CH_2=CH—OCOR wherein R is C_1–C_{18},

(d) alkyl substituted acrylamides and methacrylamides of the formula CH_2=CR—$CONR_1R_2$ wherein R is H or CH_3, R_1 is H or C_1–C_{12} and R_2 is C_1–C_{18},

(e) diesters of fumaric, itaconic and maleic acids, and

(f) vinyl ethers; and

(iii) 0–30 mole perce..t of at least one monomer selected from the group consisting of:

(a) hydroxy functional acrylates and methacrylates,

(b) cationic monomers selected from the group consisting of t-butyl aminoethyl methacrylate, dimethyl aminoethyl methacrylate, diethyl aminoethyl methacrylate, and the quaternized derivatives thereof,

(c) acrylamide and non-alkyl substituted acrylamides, and

(d) cyclic amides, wherein said carboxylated polymer is neutralized to an extent that 3 to 100% of the carboxyl groups have been reacted; and

(B) a nonionic resin selected from the group consisting of polyvinyl acetate hydrolyzed to an extent that from 15 to 60% of its acetate groups are converted into hydroxyl groups and copolymers of vinyl acetate and vinyl pyrrolidone containing at least about 50% vinyl acetate; 1 to 15% water, a propellent selected from the group consisting of 2–7% carbon dioxide, 5–35% hydrocarbon and mixtures thereof, the remainder of said composition to equal 100%, comprising ethanol or isopropanol or mix-

tures thereof, all percentages expressed by weight, said hair spray resin being soluble in said composition.

4,315,911

FLAVORING WITH MIXTURE OF ACETYL DIISOBUTYLENES

Richard M. Boden, Monmouth Beach, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Filed Oct. 9, 1980, Ser. No. 195,672
Int. Cl.³ A23L *1/226*
U.S. Cl. 424—48 **7 Claims**

1. A process for augmenting or enhancing the aroma or taste of a consumable material selected from the group consisting of foodstuffs, chewing gums, toothpastes and mouthwashes, comprising the steps of adding to said consumable material from 0.02 ppm up to about 50 ppm based on total weight of said consumable material of a composition of matter containing a major proportion of acetyl diisobutylene molecules defined according to the structure:

wherein in the mixture, in each of the molecules, one of the dashed lines represents a carbon-carbon double bond and the other of the dashed lines represents a carbon-carbon single bond produced according to the process comprising the steps of (a) dimerizing isobutylene in the presence of an alkyl aluminum chloride catalyst thereby producing a mixture of dimers and (b) acylating the resulting mixture of dimers with an acetylating agent selected from the group consisting of acetic anhydride, acetyl chloride and acetyl bromide in the presence of a catalyst selected from the group consisting of boron trifluoride, boron trifluoride etherate, stannic chloride, ethyl aluminum dichloride and diethyl aluminum chloride and distilling the resultant reaction product at a vapor temperature in the range of 50°–53° C. and a liquid temperature in the range of 59°–65° C. and a pressure of 2.0 mm/Hg.

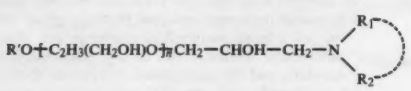
4,315,912

CATIONIC SURFACTANTS

Gregoire Kalopissis, Neuilly-sur-Seine; Guy Vanlerberghe, Claye-Souilly, and Henri Sebag, Paris, all of France, assignors to L'Oreal, Paris, France

Filed Dec. 5, 1979, Ser. No. 100,323
Claims priority, application France, Dec. 6, 1978, 78 34418
Int. Cl.³ A61K *7/06, 7/00, 31/00, 47/00*
U.S. Cl. 424—70 **12 Claims**

1. A cosmetic composition for the treatment of the hair or skin comprising at least one cationic surfactant of the formula



wherein

R′ represents a hydrocarbon radical derived from a member selected from the group consisting of alcohols and sterols of a member selected from the group consisting of lanolin and hydrogenated lanolin,

n is a number between 0.5 and 10, and

R_1 and R_2 are selected from the group consisting of lower alkyl containing 1–4 carbon atoms and lower hydroxyalkyl wherein the alkyl moiety contains 1–4 carbon atoms, or R_1 and R_2 together with the nitrogen atom to which they are attached form a heterocycle containing 5 or 6 chains.

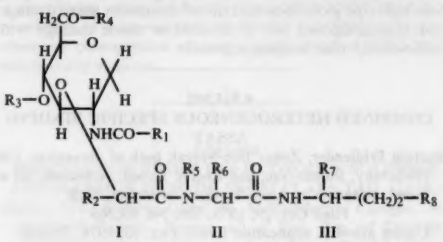
4,315,913

IMMUNOLOGICALLY ACTIVE DIPEPTIDYL 2-AMINO-1,2-DIDEOXY-D-GLUCOSE DERIVATIVES AND METHODS OF PREPARATION

Philippe L. Durette, New Providence, N.J., assignor to Merck & Co. Inc., Rahway, N.J.

Filed Jun. 9, 1980, Ser. No. 157,906
Int. Cl.³ A61K *39/00, 37/02;* **C07C** *103/52*
U.S. Cl. 424—88 **8 Claims**

1. Dipeptidyl 2-amino-1,2-dideoxy-D-glucoses of the general structural formula:



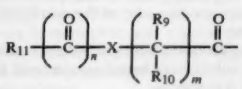
I II III

wherein:

R_1 is C_{1-7}alkyl, C_{1-7}alkyl substituted by hydroxy, mercapto, alkoxy of 1–3 carbons, alkylmercapto of 1–3 carbons, hydroxy or mercapto esterified by an acid of 1–4 carbon atoms, halogen, carboxyl or carboxyl functionally modified by esterification with a lower alcohol of 1–3 carbons or by amidation; phenyl; or phenyl substituted by one or more alkyl groups of 1–3 carbon atoms or hydroxy or mercapto groups either free or etherified by an alkyl group of 1–3 carbons or esterified by an acid of 1–3 carbons, alkyldioxy of 1–4 carbons, clycoalkyldioxy of 5–7 carbon atoms, amino, trifluoromethyl, halo or phenyl;

R_2 is hydrogen; or C_{1-10} alkyl;

R_3 and R_4 may be the same or different and are each independently hydrogen, or acyl of the formula:



where X is —O—, —S—, $—CH_2—$, or

R_9, R_{10}, and R_{12} may be the same or different and are each independently hydrogen; C_{1-20} alkyl; C_{2-20} alkenyl; C_{1-20} alkylcarbonyloxy; amino; phenyl; benzyl; C_{1-20} alkoxymethyl; or C_{1-20} alkylamido;

R_{11} is hydrogen; C_{1-30} alkyl; C_{2-30} alkenyl; C_{1-30} alkoxy; phenyl; C_{1-20} alkylsulfonyl; or cholesteryl; and

m is 0–90; and n is 0 or 1, provided that when n is 0, R_{11} may additionally be phenyl phenyl substituted by halo or phenyl, 1-adamantyl, or heterocycle selected from the group consisting of 2- or 3-furyl, 2- or 3-thienyl, 2- or 3-pyrrolidinyl, 2-, 3-, or 4-pyridyl, and 1-tetrazolyl, said heterocycle optionally substituted with C_{1-20} alkylcarbonyl;

R_5 is hydrogen; or R_5–R_6 together is $—CH_2—CH_2—CH_2—$;

R_6 is hydrogen; C_{1-7} alkyl; hydroxymethyl; mercaptomethyl; benzyl; or benzyl substituted by one or more alkyl groups of 1–3 carbon atoms or hydroxy or mercapto groups either free or etherified by an alkyl group of 1–3 carbons or esterified by an acid of 1–4 carbons, alkyldioxy of 1–4 carbons, cy-

cloalkyldioxy of 5–7 carbon atoms, amino, trifluoromethyl, halo or phenyl;

R_7 and R_8 may be the same or different and are each independently COOR or CONR'R", where R is hydrogen or C_{1-7} alkyl, and R' and R" are each independently hydrogen or C_{1-3} alkyl;

when R_2 is C_{1-10} alkyl, the stereochemistry at asymmetric center I can be either D or L; when R_6 is not hydrogen, the stereochemistry at asymmetric center II is L; the stereochemistry at asymmetric center III is D.

4. A composition comprising a vaccine against bacterial, viral or parasitic infections or against various tissue antigens of normal or pathogenic origin and a compound of claim 1 in an amount effective to impart an immunostimulatory response.

4,315,914
PHARMACEUTICAL COMPOSITIONS USEFUL AS CELLULAR IMMUNOPOTENTIATOR AND ANTITUMOR AGENT AND PROCESS FOR PRODUCTION THEREOF

Seiji Arakawa, 2345, Hiyoshi Honcho, Kohoku-Ku, Yokohama-shi, Kanagawa-ken; Tomio Seki, Ohta; Hidekazu Matsuoka, Tokyo; Hatsunori Harada, Suginami, and Michinari Ninomiya, Hiroshima, all of Japan, assignors to Seiji Arakawa, Japan

Filed Apr. 4, 1980, Ser. No. 137,502
Int. Cl.[3] A61K *39/285*
U.S. Cl. 424—89 **10 Claims**

1. A pharmaceutical composition of matter useful as cellular immunopotentiator and immune antitumor agent comprising as active ingredient an attenuated strain of vaccinia virus which has no substantial capacity to form pocks in rabbits and which exhibits a substantially reduced humoral immune activity and an enhanced cellular immune activity in mice, in combination with a pharmaceutically acceptable carrier for the active ingredient virus, said attenuated strain having been obtained by the serial passages of vaccinia virus in chick embryo cell monolayer culture, after the serial passages of vaccinia virus in mouse kidney cell monolayer culture.

4,315,915
PROCESS FOR THE PREPARATION OF STABLE COPPER (II) SULFATE MONOHYDRATE APPLICABLE AS TRACE ELEMENT ADDITIVE IN ANIMAL FODDERS

Ferenc Kovacs, Varpalota; Akos Andor, and Tivadar Palagyi, both of Budapest, all of Hungary, assignors to Dolokémia Vegyipari Szövetkezet Közös Vállalat, Várpalota, Hungary

Filed Jun. 13, 1980, Ser. No. 159,380
Int. Cl.[3] A01N *59/20;* **A61K** *33/34;* **C01G** *3/10*
U.S. Cl. 424—143 **2 Claims**

1. In a process for the production of non-hygroscopic, stable, easily grindable copper(II) sulfate monohydrate applicable as a trace element additive in animal fodders, by neutralizing the free sulfuric acid content of copper(II) sulfate pentahydrate feed with an alkaline agent selected from sodium, potassium or ammonium hydroxide, carbonate or hydrocarbonate and removing four moles of its crystal water content by drying at 80° to 150° C. for at least 30 minutes, the improvement comprising treating copper (II) sulfate pentahydrate, melted in its own crystal water, during the neutralization with 3 to 20% by weight of said alkaline agent calculated as sodium carbonate based on the weight copper(II) sulfate pentahydrate feed in addition to the stoichiometric amount of said alkaline agent required to neutralize the free sulfuric acid content of said copper(II) sulfate pentahydrate.

4,315,916
TOPICAL SALVE

Jonas S. Likens, deceased, late of Macon County, Tenn.; by Ruby L. Ford, heir; by Mary F. L. Coulter, heir; by Pauline L. Coulter, heir, all of Lafayette, Tenn., and by Lucille L. Filson, heir, Rte. 1, Hartsville, Tenn. 37074, assignors to Lucille L. Filson, Hartsville, Tenn.

Continuation-in-part of Ser. No. 873,087, Jul. 18, 1978, Pat. No. 4,229,437. This application Dec. 28, 1979, Ser. No. 108,046
Int. Cl.[3] A61K *33/00, 35/78*
U.S. Cl. 424—145 **9 Claims**

1. The diethyl ether-soluble compound, which is an oil having the following properties:

(1) approximate empirical formula—$C_{15}H_{25}O$ or a multiple thereof;

(2) thin layer chromatograph (TLC)—single spots (eluting solvent—22 parts by volume of benzene, 2 parts by volume of acetic, 4 parts by volume of methanol)

r_f=0.56 on silica gel (Merck F-254)

r_f=0.15 (tails to origin) on alumina (Baker)

r_f=0.99 on kieselguhr

r_f=0.86 (in half-moon form) on polyamide (Baker);

(3) infrared (IR) absorption spectrum as set forth in FIG. 2;

(4) nuclear magnetic resonance (NMR) as set forth in FIG. 3;

(5) gas chromatography (GC)

Retention Time—12.3 minutes (as compared with 3.9 minutes for acetophenone, an internal standard)

Machine: Shimadzu, Mini-2

Column: 40 meter capillary

Coating: OV-101

Column Temperature: 200° C.

Injector Temperature: 210° C.

Attenuation: 64

Range: 1.

2. A pharmaceutically-acceptable composition for treating skin topically and consisting essentially of an admixture of (a) zinc chloride with (b) the compound of claim 1, the weight ratio of (a):(b) being within the range of from 1:20 to 20:1.

4,315,917
METHOD OF TREATING CANNIBALISM IN POULTRY

John W. Willard, Sr., 1314 S. 7th St., Rapid City, S. Dak. 57701

Continuation of Ser. No. 737,517, Nov. 1, 1976, abandoned, which is a continuation-in-part of Ser. No. 712,518, Aug. 6, 1976, Pat. No. 4,029,770, and a continuation-in-part of Ser. No. 593,712, Jul. 7, 1975, Pat. No. 4,084,938, which is a continuation-in-part of Ser. No. 317,097, Dec. 20, 1972, Pat. No. 3,893,943, which is a continuation of Ser. No. 108,198, Jan. 20, 1971, abandoned, said Ser. No. 712,518, is a division of Ser. No. 455,022, Mar. 26, 1974, Pat. No. 3,984,540. This application Jul. 8, 1980, Ser. No. 166,908
Int. Cl.[3] A61K *31/12*
U.S. Cl. 424—155 **23 Claims**

1. A method of treating cannibalism in cannibalistic poultry grown under crowded conditions conditions comprising administering drinking water to the said poultry containing an effective amount of a treating agent to control the said cannibalism, the said treating agent being present in the drinking water in an amount of about 0.0001–200 parts per million by weight on a dry solids basis and being prepared by a process comprising

admixing a water soluble alkali metal silicate with an aqueous medium containing a dissolved substance which is a source of calcium ion and a dissolved substance which is a source of magnesium ion,

the aqueous medium containing said dissolved substances in amounts to provide between about 1×10^{-4} and 1×10^{-1} mole per liter each of calcium ion and magnesium ion,

the aqueous medium containing said dissolved substances in amounts to provide a molar ratio of calcium ion to magnesium ion between about 2.0:1.0 and 1.0:2.0,

the alkali metal silicate having an alkali metal oxide to silicon

dioxide ratio between about 0.9:1.0 and less than 2.0:1.0 and being admixed with the aqueous medium in an amount of about 0.05–2 moles per liter,

reacting the alkali metal silicate with said dissolved substances providing calcium ion and magnesium ion to produce an aqueous suspension of finely divided particles of the reaction product,

admixing a micelle-forming surfactant with the aqueous medium in an amount to form micelles comprising said finely divided particles upon agitating the aqueous medium, and

agitating the aqueous medium containing the finely divided particles and surfactant to form said micelles.

4,315,918

PHARMACEUTICAL FORMULATION OF GUAR GUM

Stephen Gayst, 19 Arthur St., Double Bay, N.S.W., Australia (2028), and Michael J. Maguire, 9 Cotton St., Epping, N.S.W., Australia (2121)

Filed Aug. 13, 1979, Ser. No. 66,304

Claims priority, application United Kingdom, Jul. 25, 1978, 31060/78

Int. Cl.³ A61K *37/02, 31/73;* C07H *37/00*

U.S. Cl. 424—177 23 Claims

1. A pharmaceutical composition for use in medicine, presented as a dry powder suitable for reconstitution by admixture with drinking water, said composition comprising a therapeutically effective, non-toxic amount of a galactomannan admixed with a gellation inhibiting amount of gelatin hydrolysate.

4,315,919

DEPYROGENATION PROCESS

Edward Shanbrom, 2252 Liane La., Santa Ana, Calif. 92705

Filed Oct. 6, 1980, Ser. No. 194,263

Int. Cl.³ A61K *35/14, 37/00*

U.S. Cl. 424—177 10 Claims

1. The method of depyrogenating a proteinaceous biological or pharmaceutical product comprising

(1) treating said proteinaceous biological or pharmaceutical product by prolonged contact with a solution or suspension of from about 0.25% to about 10% by weight of a non-denaturing amphiphile,

(2) adding to the resulting treatment mixture a protein precipitant for said proteinaceous biological or pharmaceutical product to thereby cause precipitation of said proteinaceous product and

(3) separating from the resulting precipitate the supernatant which contains said amphiphile together with endotoxin dissociated or disaggregated by said prolonged contact.

4,315,920

ADENOSINE DEAMINASE INHIBITORS

Howard J. Schaeffer, Richmond, Va.; Paulo M. S. DeMiranda, Raleigh, N.C.; Gertrude B. Elion, Chapel Hill, N.C., and George H. Hitchings, Durham, N.C., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Continuation of Ser. No. 838,167, Sep. 30, 1977, abandoned, which is a continuation of Ser. No. 605,718, Aug. 18, 1975, abandoned. This application Jan. 14, 1980, Ser. No. 111,817

Claims priority, application United Kingdom, Feb. 13, 1975, 6173/75

Int. Cl.³ A61K *31/70, 31/52*

U.S. Cl. 424—180 6 Claims

1. The method of preventing rapid degradation of 9-β-D-arabinofuranosyladenine or a pharmaceutically acceptable salt thereof in a mammal undergoing systemic treatment with 9-β-D-arabinofuranosyladenine or a pharmaceutically acceptable salt thereof by inhibiting the conversion of 9-β-D-arabinofuranosyladine or a pharmaceutically acceptable salt thereof comprising administering to said mammal an effective degradation inhibition amount of erythro-9-(2-hydroxy-3-nonyl)adenine or a pharmaceutically acceptable salt thereof.

4,315,921

PHARMACEUTICAL COMPOSITION CONTAINING FARA-AMINO-BENZOIC ACID-N-D-XYLOSIDE AS AN ACTIVE INGREDIENT

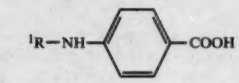
Chikao Yoshikumi, Kunitachi; Yoshio Ohmura, Funabashi; Fumio Hirose, Tokyo; Masanori Ikuzawa, Tachikawa; Kenichi Matsunaga, Tokyo; Takayoshi Fujii, Tokyo; Minoru Ohhara, Tokyo, and Takao Ando, Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 39,282, May 15, 1979, abandoned. This application Dec. 10, 1979, Ser. No. 102,224

Int. Cl.³ A61K *31/70*

U.S. Cl. 424—180 4 Claims

1. A method for the treatment of hypertension, which comprises administering to a mammal suffering from hypertension an effective amount of a compound of the formula:



(I)

wherein ^1R denotes the residual group formed by removing OH at 1 position from xylose, or a pharamceutically acceptable salt thereof.

4,315,922

NIKKOMICINS, A PROCESS FOR THEIR PREPARATION AND THEIR USE AS AGENTS FOR COMBATING PESTS

Hans-Paul Hagenmaier, Tübingen; Wilfried König, Pinneberg; Hans Zähner; Hans-Peter Fiedler, both of Tübinger; Wolfgang Dehler, Dettenhausen; Adelinde Keckeisen, Tübingen; Hartwig Holst, Pohlheim, and Gerhard Zoebelein, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

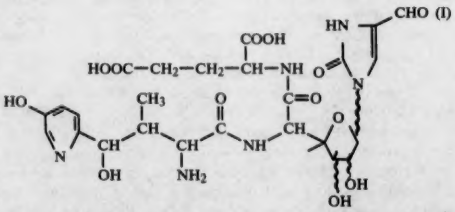
Filed Jul. 10, 1980, Ser. No. 167,291

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1979, 2928137

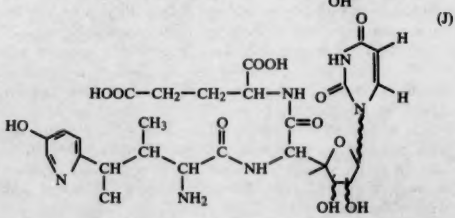
Int. Cl.³ A61K *31/71;* C07H *19/06*

U.S. Cl. 424—181 12 Claims

1. A pure nikkomicin selected from the group consisting of

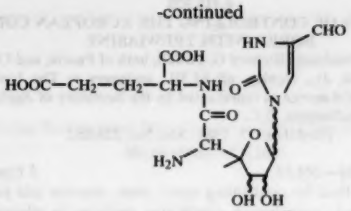


(I)

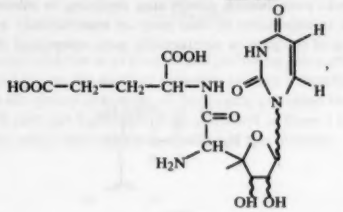


(J)

-continued



(M)



(N)

a mixture of nikkomicin I and J, and a mixture of nikkomicin M and N.

8. A pesticidal composition comprising a pesticidally effective amount of a nikkomicin according to claim **1** in admixture with a diluent.

9. A method of combating pests selected from the group consisting of arthropods, nematodes, fungi and bacteria which comprises applying to the pests, or to a habitat thereof, a pesticidally effective amount of a nikkomicin according to claim **1**.

4,315,923

PROCESS FOR THE PRODUCTION OF ORGAN EXTRACTS WITH HIGH HERPARIN CONTENT

Istvan Takacs; György Kerey; Janos Illes; Peter Rudolf; Pal Gere; Laszlo Czebe, and Erzsebet Neszmelyi, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar RT, Budapest, Hungary

Filed Mar. 19, 1980, Ser. No. 131,824

Claims priority, application Hungary, Mar. 21, 1979, RI 705

Int. Cl.[3] **A61K** *31/725;* **C08B** *37/10*

U.S. Cl. 424—183 **4 Claims**

1. A process for the production of an aqueous extract with a heparin content of substantially 150 to 300 NE/ml, comprising the steps of:

forming a heparin-enriched amorphous granular raw material containing 90 to 95% by weight dry substance from heparin-containing animal waste; and

extracting said granular raw material by counterflow extraction at a temperature between 20° C. and 80° C. with an aqueous salt solution of an electrolyte composition of 1.5 to 12.0% and a pH of 8 to 12.8 or with an alkaline solution of 0.5 normal to 1.0 normal to form the aqueous extract.

4,315,924

NOVEL MEDICAMENT BASED ON ASPIRIN AND HEPTAMINOL

Jacques Perrot, Paris, France, assignor to Societe D'Etudes Scientifiques et Industrielles, Paris, France

Filed Nov. 10, 1980, Ser. No. 205,727

Claims priority, application France, Nov. 26, 1979, 79 29036

Int. Cl.[3] **A61K** *31/60, 31/605, 31/615*

U.S. Cl. 424—233 **6 Claims**

6. The method of enhancing the analgesic effect of aspirin by subjects in need of same which comprises the co-administration to said subjects of heptaminol with aspirin in the ratio of one part by weight to two parts by weight.

4,315,925

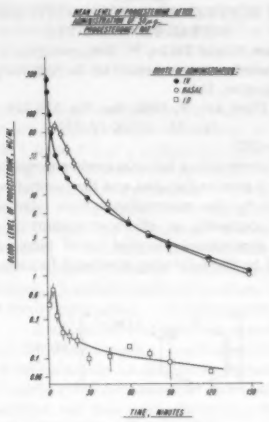
METHOD OF ADMINISTERING NATURAL FEMALE SEX HORMONES

Anwar A. Hussain; Shinichiro Hirai, and Rima Bawarshi, all of Lexington, Ky., assignors to University of Kentucky Research Foundation, Lexington, Ky.

Filed May 30, 1980, Ser. No. 154,995

Int. Cl.[3] **A01N** *45/00*

U.S. Cl. 424—239 **20 Claims**



1. A method of mammalian contraception which comprises nasally administering to a female mammal a contraceptively effective amount of a combination of progesterone and a pharmaceutically acceptable, estrogenically active form of 17β-estradiol.

7. A method according to claim **1**, **3**, **4** or **6** wherein the pharmaceutically acceptable, estrogenically active form of 17β-estradiol is selected from the group consisting of 17β-estradiol, 3-monoesters of 17β-estradiol, 17-monoesters of 17β-estradiol and 3,17-diesters of 17β-estradiol.

4,315,926

DIBENZ[C,E]AZEPINES

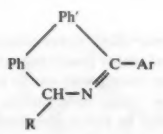
Heinz W. Gschwend, New Providence, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 26, 1979, Ser. No. 106,645

Int. Cl.[3] **A61K** *31/55;* **C07D** *223/18*

U.S. Cl. 424—244 **7 Claims**

1. A 7-aryl-5H-dibenz[c,e]azepine compound of the formula



wherein each of Ph and Ph′ is 1,2-phenylene, unsubstituted or para and meta mono- or di-substituted by lower alkyl, hydroxy, lower alkoxy, halogeno or trifluoromethyl; Ar is phenyl unsubstituted or mono- or di-substituted by lower alkyl, hydroxy, lower alkoxy, halogeno, or trifluoromethyl; and R is hydrogen, lower alkyl, hydroxy, lower alkoxy, amino, mono-, di-lower alkylamino or lower alkanoyl derivatives of said 5-(hydroxy or amino) compounds; the 6-N-oxides and pharmaceutically acceptable acid addition salts thereof.

6. An anxiolytic pharmaceutical composition comprising

anxiolytically effective amount of a compound as claimed in claim 1, together with a pharmaceutical excipient.

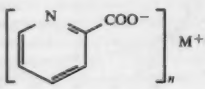
4,315,927

DIETARY SUPPLEMENTATION WITH ESSENTIAL METAL PICOLINATES

Gary W. Evans, Grand Forks, N. Dak., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Aug. 8, 1980, Ser. No. 176,234
Int. Cl.[3] A61K *31/555*
U.S. Cl. 424—245 11 Claims

1. A food composition for selectively supplementing essential metals in a mammalian diet and for facilitating absorption of said metals by the mammalian system comprising a food composition containing an effective amount of at least one exogenously synthesized essential metal picolinate complex characterized by the following structural formula:



wherein M represents the metallic cation and n is equal to the cation's valence.

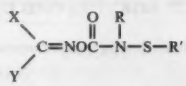
4,315,928

N-AMINOSULFENYL CARBAMATE COMPOUNDS, COMPOSITIONS AND USE

Duane E. Thurman, Salinas, Calif., assignor to Union Carbide Corporation, New York, N.Y.

Filed Jun. 26, 1975, Ser. No. 590,463
Int. Cl.[3] C07C *161/00;* C07D *295/22;* A01N *41/12, 43/84*
U.S. Cl. 424—248.5 39 Claims

1. A compound of the formula:



wherein:

R is hydrogen, lower alkyl, lower alkenyl, lower alkoxy, or lower cycloalkyl, either unsubstituted or, except where R is hydrogen, substituted with one or more chloro, bromo, fluoro, nitro or cyano substituents, or a combination thereof, or phenyl or lower phenylalkyl, either unsubstituted or substituted with one or more chloro, bromo, fluoro, nitro, cyano, lower alkyl, lower haloalkyl or lower alkoxy substituents or a combination thereof;

R′ is lower dialkylamino or morpholino which may be unsubstituted or aliphatically substituted with one or more chloro, fluoro, bromo, nitro, lower haloalkyl or lower alkoxy;

X is alkylthio, cyanoalkyl, cyanoalkylthio;

Y is hydrogen or alkyl;

with the proviso that the total number of aliphatic carbon atoms in X and Y shall not exceed 12.

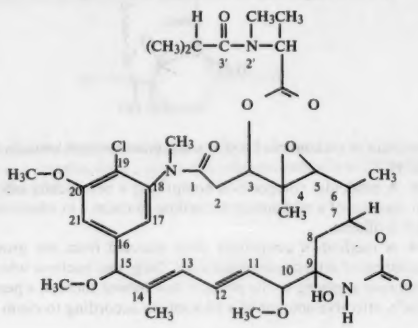
4,315,929

METHOD OF CONTROLLING THE EUROPEAN CORN BORER WITH TREWIASINE

Bernard Freedman; Richard G. Powell, both of Peoria, and Cecil R. Smith, Jr., Dunlap, all of Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jan. 27, 1981, Ser. No. 228,852
Int. Cl.[3] A01N *43/86*
U.S. Cl. 424—248.54 3 Claims

1. A method for controlling insect pests, wherein said pests are European corn borers, comprising applying to substrates susceptible to infestation by said pests an insecticidally effective amount of the pure or substantially pure compound of the formula.



4,315,930

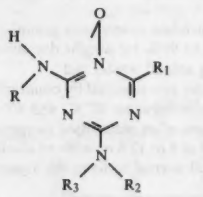
ANIMAL FEED AND PROCESS

Melvin J. DeGeeter, and John M. McCall, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Jun. 23, 1980, Ser. No. 161,946
Int. Cl.[3] A61K *31/53, 27/00*
U.S. Cl. 424—249 6 Claims

1. A process for obtaining increased production in meat-producing, egg-laying, or milk-producing animals comprising feeding to said animals an effective amount of a compound of the formula:

Formula I



wherein R is a member selected from the group consisting of hydrogen, R_4 wherein R_4 is alkyl of from 1 to 8 carbon atoms, inclusive, including isomeric forms thereof, alkenyl of from 2 to 8 carbon atoms, inclusive, including isomeric forms thereof, cycloalkyl of from 3 to 7 carbon atoms,

and acyl wherein acyl is up to and including five carbon atoms. R_1 is a member selected from the group consisting of hydrogen, R_4, and

wherein R_5 is selected from the group consisting of hydrogen,

and acyl wherein acyl is up to and including five carbon atoms; R_2 and R_3 are the same or different and are a member selected from the group consisting of hydrogen, provided that both R_2 and R_3 are not hydrogen; R_4, cycloalkyl of from 3 to 8 carbon atoms, alkyl substituted cycloalkyl of the formula

wherein n is an integer of from 2 to 7, inclusive, and R_7 is a member selected from the group consisting of hydrogen and alkyl of from 1 to 5 carbon atoms, inclusive, including isomeric forms thereof; alkenyl of from 2 to 8 carbon atoms, inclusive, including isomeric forms thereof, aralkyl wherein Ar is a member selected from the group consisting of phenyl, substituted phenyl wherein 1 or 2 hydrogens are replaced with chlorine, fluorine, bromine, iodine, R_6, $—OR_6$, or $—CF_3$ and the substituents can be the same or different, and R_6 is alkyl of from 1 to 4 carbon atoms, inclusive, including isomeric forms thereof, and R_2 and R_3 taken together with

is a heterocyclic moiety of from 4 to 8, inclusive, ring atoms and 1 or 2 hetero atoms selected from the group consisting of nitrogen, and oxygen, or a substituted heterocylic moiety wherein 1, 2, or 3 of the carbon atoms of the heterocycle are substituted with R_4.

4,315,931

N-PYRIMIDINYL-IMIDOACID ESTERS AND DRUGS CONTAINING THE SAID COMPOUNDS

Peter Scharwaechter, Moorrege; Klaus Gutsche, Rellingen; Wilhelm Kohlmann, Moorrege, all of Fed. Rep. of Germany; Gerhard Kroemer, deceased, late of Elmshorn, Fed. Rep. of Germany; by Norma Kroemer, legal representative, Lahn-Giessen; by Helmut Kroemer, legal representative, and by Maria M. Kroemer, legal representative, both of Stolberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep-. of Germany

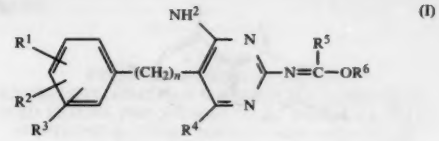
Filed Jul. 3, 1978, Ser. No. 921,701

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1977, 2730468

Int. Cl.³ C07D *239/48;* **A61K** *31/505*

U.S. Cl. 424—251 **13 Claims**

1. A N-pyrimidinyl-imidoacid ester of the general formula I



(I)

where R^1, R^2 and R^3, which may be identical or different, are hydrogen, methyl, methoxy or chlorine, R^4 is hydrogen or alkyl of 1 to 4 carbon atoms, R^5 is alkyl of 1 to 6 carbon atoms or benzyl, R^6 is alkyl of 1 to 4 carbon atoms or benzyl and n is 0 or 1.

13. A pharmaceutical composition for treatment of systemic infectious deseases comprising a compound as set forth in claim **1**, from 1:10 to 5:1 of a sulfonamide selected from the group consisting of 2-sulfanilamido-pyridine, 2-sulfanilamido-thiazole, 2-sulfanilamido-pyrimidine, 2-sulfanilamido-4-methylpyrimidine, 2-sulfanilamido-4,6-dimethyl-pyrimidine, 4-sulfanilamido-2,6-dimethyl-pyrimidine, 5-sulfanilamido-3,4-dimethyl-isoxazole, 3-sulfanilamido-6-methoxy-pyridazine, 3-sulfanilamido-6-chloropyridazine, 4-sulfanilamido-2,6-dimethoxy-pyrimidine, 3-sulfanilamido-2-phenyl-pyrazole, 2-sulfanilamide-5-methylpyrimidine, 2-sulfanilamido-5-methoxy-pyrimidine, 2-sulfanilamido-5-methyl-isoxazole, 2-sulfanilamido-4,5-dimethyl-oxazole, 2-sulfanilamido-3-methoxy-pyrazine, 4-sulfanilamido-5,6-dimethoxy-pyrimidine, 4-sulfanilamido-3-methoxy-1,2,5-thiadiazole and 4-aminobenzene-sulfonyl-guanidine, and non-toxic, therapeutically acceptable solid or liquid carriers and galenical assistants.

4,315,932

METHOD OF USING 1H-PYRIMIDO-4,5-c -1,2-DIAZEPINES AS ANTIBACTERIAL AND ANTICOCCIDOCIDAL AGENTS

Robert W. Morrison, Jr.; William R. Mallory, and Virgil L. Styles, all of Raleigh, N.C., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

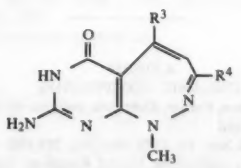
Division of Ser. No. 926,072, Jul. 19, 1978, abandoned. This application Sep. 17, 1979, Ser. No. 76,404

Claims priority, application United Kingdom, Jul. 20, 1977, 30380/77

Int. Cl.³ A61K *31/505;* **C07D** *487/04*

U.S. Cl. 424—251 **8 Claims**

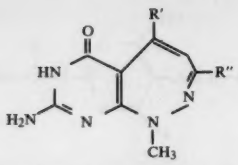
1. A method of potentiating the antibacterial activity of a 2,4-diamino-5-benzylpyrimidine and/or sulphamethoxazole against *Staphylococcus aureus* bacteria which comprises applying to *Staphylococcus aureus* bacteria an effective antibacterial amount of a 2,4-diamino-5-benzylpyrimidine and/or sulphamethoxazole and an effective potentiating amount of a compound of formula II or a tautomer or a pharmaceutically acceptable salt thereof



(II)

wherein R^3 is phenyl, phenyl substituted with one or more hydroxy and R^4 is a group $—CO_2R$ where R is lower alkyl.

4. The method of treating coccidiosis in a chicken which comprises orally administering to said chicken an effective anticoccidiosis amount of a compound of formula III or a tautomer or a pharmaceutically acceptable salt thereof



(III)

wherein R′ is phenyl, phenyl substituted with one or more lower alkoxy and R″ is selected from phenyl and —CH_2R in which R is lower alkyl either alone or in combination with sulphaquinoxaline and/or a 2,4-diamino-5-benzylpyrimidine in an effective potentiating amount.

4,315,933

ANTIBACTERIAL AMIDE COMPOUNDS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME

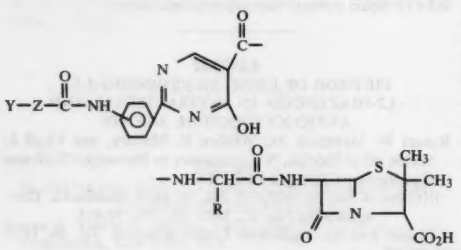
Thomas F. Mich; Theodore H. Haskell, both of Ann Arbor, and Marland P. Hutt, Jr., Saline, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Sep. 24, 1980, Ser. No. 190,154

Int. Cl.³ A61K *31/505*; C07D *499/70*

U.S. Cl. 424—251 **12 Claims**

1. A compound of the formula



and pharmaceutically acceptable salts thereof; wherein Z is a single bond and Y is lower alkyl, dichloromethyl, benzyl, CF_3, lower alkyl amino, lower alkyl carbonyl, lower alkoxy carbonyl, benzyloxy, and lower alkoxy, where Z is a methylene group and Y is cyano, lower alkoxy, tetrazolyl, or R^1 CH_2S where R^1 is CF_3 or CN and R is phenyl, 4-hydroxyphenyl, 2-thienyl or cyaclohexa-1,4-dien-1-yl.

11. An antibacterial pharmaceutical composition comprising from 50 mg to 1000 mg of a compound of claim **1** and a pharmaceutical carrier.

4,315,934

ORGANIC COMPOUNDS

Anne V. Christensen, Farum, Denmark, assignor to Sandoz Ltd., Basel, Switzerland

Filed Sep. 19, 1980, Ser. No. 188,686

Claims priority, application United Kingdom, Sep. 24, 1979, 32990/79

Int. Cl.³ A61K *31/435*

U.S. Cl. 424—256 **5 Claims**

1. A method of alleviating pain in a subject in need of such treatment which method comprises administering to said subject an analgesically effective amount of 4,5,6,7-tetrahydroisoxazolo[5,4-c]-pyridine-3-ol.

4,315,935

N,N′-BIS[SUBSTITUTED-1,2,3,4-TETRAHYDROISOQUINOLINOLYL]DISULFONYLIMIDES AND ANTIALLERGIC COMPOSITIONS AND METHOD OF USE

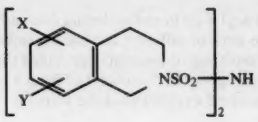
Fadia E. Ali, Cherry Hill, N.J., assignor to SmithKline Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 140,021, Apr. 14, 1980, abandoned. This application Jun. 13, 1980, Ser. No. 159,340

Int. Cl.³ A61K *31/47*; C07D *217/16*

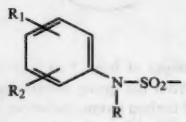
U.S. Cl. 424—258 **25 Claims**

1. A compound of the formula (I)



(I)

in which X is hydrogen, methyl, bromo or chloro; and Y is a benzeneaminosulfonyl radical of the formula



in which R is hydrogen or methyl; R_1 is hydrogen, bromo, chloro, nitro, methyl, trifluoromethyl or methoxy; and R_2 is hydrogen, chloro or methyl provided that when R_2 is chloro, R_1 is chloro, methyl or trifluoromethyl and when R_2 is methyl, R_1 is methyl; or an alkali metal salt of said compound.

23. A method of inhibiting the symptoms of asthma which comprises administering to a subject in need of said inhibition a therapeutically effective amount for producing said inhibition of a compound of claim **1**.

4,315,936

ANALGESIC COMPOSITION

Robert J. Capetola, Doylestown, Pa., and John L. McGuire, Whitehouse Station, N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Dec. 17, 1979, Ser. No. 104,495

Int. Cl.³ A61U *31/38, 31/48*

U.S. Cl. 424—260 **6 Claims**

1. A method of controlling pain in mammals which comprises administering to a mammal an effective amount of a composition comprising from about 10 to 600 mg. of α-methyl-4-[2-thienylcarbonyl] benzene acetic acid and from about 5 to 80 mg. of a centrally-acting analgesic selected from the group consisting of codeine and butorphanol.

4,315,937

ERGOTS AND THEIR USE IN TREATING MINIMAL BRAIN DYSFUNCTION

William P. Maclay, Farnborough, and Mackenzie G. Wallace, Hatfield, both of England, assignors to Sandoz Ltd., Basel, Switzerland

Filed Nov. 26, 1980, Ser. No. 210,695

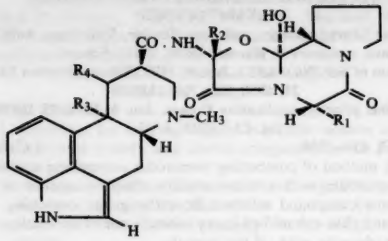
Claims priority, application United Kingdom, Nov. 28, 1979, 41095/79; Mar. 21, 1980, 10762/80

Int. Cl.³ A61K *31/48, 31/475*

U.S. Cl. 424—261 **7 Claims**

1. A method of treating minimal brain dysfunction in children which comprises administering to a child having the minimal brain dysfunction a therapeutically effective dose of

(i) a compound of formula I



wherein

R_1 is isopropyl, isobutyl, sec.butyl or benzyl,

R_2 is methyl, ethyl or isopropyl,

R_3 and R_4 are each hydrogen, or

R_3 and R_4 together are a single bond, or a pharmaceutically acceptable acid addition salt thereof; or

(ii) a mixture of approximately equal proportions by weight of (a) dihydroergocornine, (b) dihydroergocristine and (c) α- and β-dihydroergocryptine in a 2:1 weight ratio in free base or pharmaceutically acceptable acid addition salt form.

4,315,938

4-PHENYL-4,5,6,7-TETRAHYDRO-PYRROLO [2,3-C] PYRIDINES AND SALTS THEREOF

Claus Schneider, Ingelheim am Rhein; Karl-Heinz Weber, Gau-Algesheim; Gerhard Wa'ther, Bingen; Karin Böke, Ingelheim am Rhein, and Wolf D. Bechtel, Appenheim, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim Gmbh, Ingelheim am Rhein, Fed. Rep. of Germany

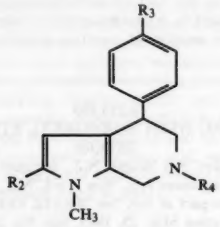
Filed Jun. 30, 1980, Ser. No. 163,969

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1979, 2927294

Int. Cl.³ A61K *31/44, 31/445;* **C07D** *471/04*

U.S. Cl. 424—267 **10 Claims**

1. A compound of the formula



wherein

R_2 is hydrogen, chlorine, bromine, formyl, acetyl, alkyl of 1 to 4 carbon atoms, nitro, cyano or $—CH_2—A$;

where

A is (alkyl of 1 to 2 carbon atoms)-amino; di(alkyl of 1 to 2 carbon atoms)-amino, where one of the alkyl moieties may have at terminal hydroxyl substituent attached thereto; or a 5-, 6- or 7-membered saturated heterocycle containing a single ring nitrogen atom, which is attached to the methylene group through the nitrogen atom and may have a hydroxyl or hydroxymethyl substituent attached to a ring carbon atom, and the 6-membered heterocycle may contain oxygen as an additional ring heteroatom in the p-position;

R_3 is hydrogen, fluorine, chlorine, bromine, methyl or methoxy; and

R_4 is hydrogen or alkyl of 1 to 3 carbon atoms;

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

4,315,939

PIPERIDINE DERIVATIVES OF 4,5-DIALKYL-3-HYDROXY-PYRROLE-2-CARBOXYLIC ACID ESTERS, PHARMACEUTICAL FORMULATIONS CONTAINING THESE COMPOUNDS AND USE IN TREATING CARDIAC ARRHYTHMIAS

Fritz-Frieder Frickel, Deidesheim; Albrecht Franke, Wachenheim; Gerda Von Philipsborn, Weinheim; Claus D. Mueller, Viernheim, and Dieter Lenke, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

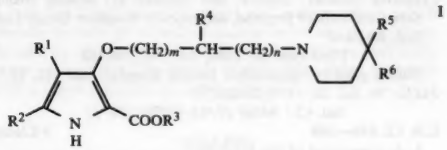
Filed Oct. 6, 1980, Ser. No. 194,441

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1979, 2941597

Int. Cl.³ A61K *31/445;* **C07D** *401/04, 401/12, 401/14*

U.S. Cl. 424—267 **10 Claims**

1. A compound of the formula I



where

R^1 and R^2 are identical or different and each is alkyl of 1 to 4 carbon atoms or aralkyl of 7 to 9 carbon atoms, or R^1 and R^2 together with the two carbon atoms by which they are linked form a 6-membered ring possessing 4 methylene groups and

R^3 is alkyl of 1 to 6 carbon atoms,

R^4 and R^5 are hydrogen or hydroxyl,

R^6 is a pyridyl or phenyl radical which may be monosubstituted or disubstituted by halogen or monosubstituted by trifluoromethyl, and

m and n are integers from 1 to 5 and the sum of m+n does not exceed 6 and, if R^4 is hydrogen, m or n may also be 0,

and its physiologically tolerated addition salts with acids.

4,315,940

ANTIDIABETIC 1-PIPERIDINE-SULFONYLUREAS

Volker Hitzel, Hofheim am Taunus; Rudi Weyer, Kelkheim; Karl Geisen, Frankfurt am Main, and Günter Regitz, Bad Soden am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

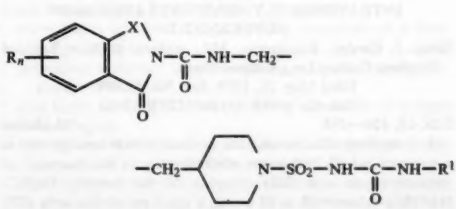
Filed Nov. 26, 1980, Ser. No. 211,331

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1979, 2948434

Int. Cl.³ A61K *31/445;* **C07D** *401/12*

U.S. Cl. 424—267 **7 Claims**

1. Sulfonylurea of the formula



in which

n is 1 or 2;

R is hydrogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or halogen, the Rs being identical or different when n is 2;

X is $—CH_2—$, $—CH_2—CH_2—$ or $—CH(CH_3)—$;

R^1 is alkyl of 2 to 8 carbon atoms, cycloalkyl, alkylcycloalkyl, dialkylcycloalkyl, cycloalkylalkyl, cycloalkenyl, or alkylcycloalkenyl, in each case with 5 to 9 carbon atoms, methylcyclopentylmethyl, cyclohexenylmethyl, chlorocyclohexyl, methoxycyclohexyl, bicyclo[2.2.1]-heptyl, bicyclo[2.2.1]-heptenyl, bicyclo[2.2.1]heptylmethyl, bicyclo[2.2.1]-heptenylmethyl, bicyclo[2.2.2]octyl, nortricyclyl, adamantyl or benzyl, or a physiologically acceptable salt thereof.

6. Method of treatment of diabetes which comprises oral administration to a diabetic patient of an effective amount of a compound as defined in claim 1.

4,315,941

URAZOLE ANALOGS OF PROSTAGLANDIN DERIVATIVES

Frederick Cassidy, Harlow, and Richard W. Moore, Bishop Stortford, both of England, assignors to Beecham Group Limited, England

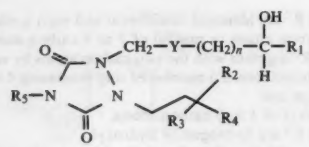
Filed Jun. 30, 1980, Ser. No. 164,158

Claims priority, application United Kingdom, Jul. 12, 1979, 24235/79; Jul. 30, 1979, 26432/79

Int. Cl.³ A61K *31/41*; C07D *249/12*

U.S. Cl. 424—269 **9 Claims**

1. A compound of the formula:



wherein

n has a value of from 3 to 5;

Y is $—CH_2CH_2—$, $—CH=CH—$; or $—C\equiv C—$;

R_1 is alkyl of 1 to 4 carbon atoms;

R_2 is hydrogen, alkyl of 1 to 4 carbon atoms or phenyl;

R_3 is hydroxy, acyloxy of 1 to 4 carbon atoms, methoxy or benzyloxy;

R_4 is hydrogen, alkyl of 1 to 9 carbon atoms, cycloalkyl of 3 to 8 carbon atoms, phenyl or naphthyl, said phenyl and naphthyl being unsubstituted or substituted with halo, trifluoromethyl, alkyl of 1 to 6 carbon atoms, hydroxy, alkoxy of 1 to 6 carbon atoms, phenyl(alkoxy of 1 to 6 carbon atoms in the alkoxy moiety or nitro; and

R_5 is alkyl of 1 to 5 carbon atoms.

8. A pharmaceutical composition comprising a quantity of a compound according to claim 1 sufficient to effect bronchodilation together with a pharmaceutically acceptable carrier.

4,315,942

INTRAVENOUSLY ADMINISTRABLE IRON SUPPLEMENT

Brian J. Corden, Kensington, Md., assignor to New England Medical Center, Inc., Boston, Mass.

Filed May 21, 1979, Ser. No. 40,899

Int. Cl.³ A61K *31/295*; C07F *15/02*

U.S. Cl. 424—295 **12 Claims**

1. A method of increasing the amount of bioavailable iron in a mammal which comprises administering to the mammal an amount of an iron (III) complex of the formula $Fe(RC\text{-}HNOH)_3$ wherein R is H or $C_{2\text{-}6}$ alkyl or of the iron (III) complex of acetohydroxamic acid effective to increase the amount of bioavailable iron.

4,315,943

CYCLOPROPYL-CARBOXYLATES USED AS NEMATOCIDES

Jacques Martel, Bondy, and Jean Tessier, Vincennes, both of France, assignors to Roussel Uclaf, Paris, France

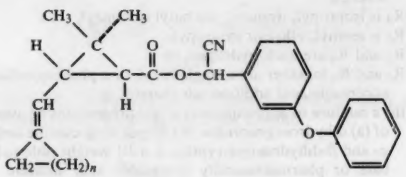
Division of Ser. No. 44,912, Jun. 4, 1979. This application Mar. 24, 1980, Ser. No. 132,836

Claims priority, application France, Jun. 6, 1978, 78 16858

Int. Cl.³ A01N *37/34*

U.S. Cl. 424—304 **2 Claims**

1. A method of combatting nematodes comprising contacting namatodes with a nematocidally effective amount of at least one compound selected from the group consisting of (R,S) and (S)α-cyano-3-phenoxy-benzyl ester of the cyclopropane carboxylic acids of the formula



wherein n is an integer from 1,2 or 3 and the acid is (1R, trans) or (1R, cis) by incorporation into soil infested therewith.

4,315,944

PHARMACEUTICAL COMPOSITION COMPRISING L-CARNITINE FOR THE TREATMENT OF HYPERLIPIDAEMIAS AND HYPERLIPOPROTEINAEMIAS

Maria T. Ramacci, Rome, Italy, assignor to SIGMA-TAU Industrie Farmaceutiche Riunite S.p.A., Rome, Italy

Filed Sep. 16, 1980, Ser. No. 187,655

Claims priority, application Italy, Sep. 21, 1979, 50331 A/79

Int. Cl.³ A61V *31/195*

U.S. Cl. 424—319 **3 Claims**

1. A therapeutical method for the treatment of patients affected by hyperlipidaemias and hyperlipoproteinaemias characterized by the fact of administering tc said patients, orally or parenterally, a pharmaceutical composition comprising an effective amount of carnitine present solely in the L form.

4,315,945

FLAVORING WITH NORBORNYL ETHERS AND ESTERS

Mark A. Sprecker, Sea Bright, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 200,012, Oct. 23, 1980. This application Mar. 25, 1981, Ser. No. 247,321

Int. Cl.³ A23L *1/226*

U.S. Cl. 426—3 **3 Claims**

1. A process for augmenting or enhancing the aroma or taste of a foodstuff or chewing gum comprising the step of adding to a foodstuff base or chewing gum base, from 0.5 ppm up to 100 ppm of a mixture of compounds represented by the structure:

wherein the "RO" moiety exists in the "5" and "6" position on the norbornyl ring structure and wherein R represents a moiety selected from the group consisting of acetyl, propionyl and allyl and wherein in the mixture the "R" moieties are identical.

4,315,946

MODIFIED VEGETABLE PROTEIN ISOLATES

Steven P. Greiner, Waukegan; Wayne E. Marshall, Spring Grove, and Linda G. Sitterly, Prospect Heights, all of Ill., assignors to Kraft, Inc., Glenview, Ill.

Filed Feb. 13, 1980, Ser. No. 121,270
Int. Cl.[3] A23J *3/00*
U.S. Cl. 426—46 6 Claims

1. A method for treating vegetable protein isolates to provide improved texture and cheese-compatible flavor properties, comprising

providing an aqueous slurry of bland vegetable protein isolate comprising less than about 1 percent by weight mono and disaccharides, based on the dry weight of said isolate,

heat treating said slurry at a temperature in the range of from about 150° F. to about 170° F. for from about 20 to about 40 minutes or equivalent time-temperature treatment to pasteurize and aid in the dispersion of said isolate,

treating said slurry with neutral food grade proteolytic enzyme selected from the class of endopeptidases at an enzyme to substrate weight ratio in the range of from 0.004 to 0.01 and innoculating said slurry with an effective microorganism selected from the group consisting of Micrococcus Cohn Subgroup 2 and Leuconostoc cremoris to provide an initial concentration of said microorganism in said slurry in the range of from about 1×10^6 to about 1×10^7 cells per milliliter of slurry,

simultaneously fermenting and hydrolyzing said innoculated slurry for from about 2 to about 4 hours at a temperature in the range of from about 30° to about 40° C., and a fermentation pH in the range of from about 6.5 to about 7.0 and

pasteurizing said slurry to provide a modified vegetable protein isolate.

4,315,947

LIQUID SEASONING COMPOSITIONS II

Paul H. Todd, Jr., and Howard E. Haley, both of Kalamazoo, Mich., assignors to KALSEC, Inc., Kalamazoo, Mich.

Filed Feb. 28, 1980, Ser. No. 125,424
Int. Cl.[3] A23L *1/27*
U.S. Cl. 426—250 57 Claims

1. A homogeneous liquid condimental composition, useful in flavoring or coloring foods and beverages, which is dispersible in brine or syrup containing solid food substrate with development of a haze, but which upon standing becomes a part of the flavoring or coloring of said food substrate present in said brine or syrup, with resulting clearing of color and haze from said brine or syrup, consisting essentially of (1) at least one condiment selected from an edible flavoring and an edible coloring and (2) a polyglycerol ester of a fatty acid, said polyglycerol having at least three glycerol units, the weight ratio of (2) to (1) in the said composition being at least 0.7:1.

4,315,948

PROCESS FOR PREPARING COOKED BACON HAVING REDUCED LEVELS OF N-NITROSAMINES

Rhule B. Sleeth, Paradise Valley; Richard F. Theiler, and Robert B. Rendek, both of Scottsdale, all of Ariz., assignors to Armour and Company, Phoenix, Ariz.

Filed Jun. 12, 1980, Ser. No. 158,679
Int. Cl.[3] A23B *4/00*
U.S. Cl. 426—266 8 Claims

1. A process for preparing cured bacon which, when cooked for consumption, contains substantially reduced levels of N-nitrosamines, said process comprising the steps of

preparing a nitrite-stable injectable curing solution comprising

a nitrite-containing pickle,

a liquid smoke in concentration to provide 20 to 160 ppm phenols and 10 to 800 ppm carbonyl compounds, based upon the green weight of the belly to be injected, the ratio of carbonyls to phenols being within the range of 0.5–5 to 1, and

an effective amount of a food grade emulsifier which does not substantially increase N-nitrosamine formation;

injecting said curing solution into a green belly; and

processing said belly to effect curing.

4,315,949

PROCESS FOR MAKING A MILK PROTEIN DIGESTION PRODUCT AND FOODSTUFFS COMPRISING SAME

Karl Schroder, Reitmehring, Fed. Rep. of Germany, assignor to Meggle Milchindustrie GmbH & Co. KG, Reitmehring, Fed. Rep. of Germany

Filed Sep. 11, 1978, Ser. No. 941,833
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1977, 2742083
Int. Cl.[3] A23C *23/00;* A23J *3/02;* A23P *1/00*
U.S. Cl. 426—334 14 Claims

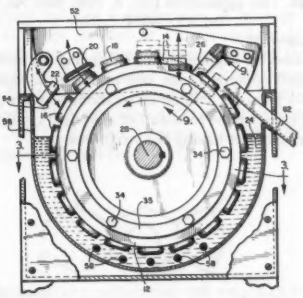
1. Process for the production of a milk protein digestion product which process comprises passing, at elevated pressure and temperature, a mixture of casein-containing milk protein, at least one digestion agent, water and a composition, which liberates an inert gas at said elevated pressure and temperature, through an extruder and allowing the product to expand freely at the outlet thereof to give a foamed form-stable extrudate with a specific weight up to 0.4 g./cm^3.

4,315,950

METHOD FOR COOKING HAMBURGER PATTIES

Claude A. Reed, Omaha, Nebr., assignor to International Food Equipment, Inc., Peoria, Ill.

Division of Ser. No. 909,795, May 26, 1978, Pat. No. 4,261,258, which is a continuation of Ser. No. 719,585, Sep. 1, 1976, abandoned, which is a continuation-in-part of Ser. No. 446,951, Feb. 28, 1974, Pat. No. 3,996,847, which is a continuation-in-part of Ser. No. 190,254, Oct. 18, 1971, abandoned. This application Jul. 21, 1980, Ser. No. 170,720
Int. Cl.[3] A23L *1/01*
U.S. Cl. 426—509 8 Claims



1. A method for rapidly cooking a hamburger patty in a water base cooking liquid, the steps comprising:

providing a first zone for performing operations on a hamburger patty;

providing a second zone containing a liquid cooking medium;

said liquid cooking medium consisting essentially of a water base liquid;

heating said liquid cooking medium to a temperature in the range from about 160° F. to about 210° F.;

inserting into a hamburger patty in said first zone a plurality of heat conductive grill means of a sufficient number and spaced with sufficient proximities to facilitate rapid cooking of said hamburger patty;

said plurality of grill means provided with heat transfer fins;

said grill means inserted transversely into said hamburger patty and substantially penetrating said patty, with heat conductive areas of said heat transfer fins remaining in heat conductive relationship with the exterior of said hamburger patty;

conveying said grill means, and said heat transfer fins, with said hamburger patty impaled thereon and immersing the same in said liquid cooking medium in said second zone;

maintaining said heat transfer fins and said grill means with said hamburger patty impaled thereon in said liquid cooking medium for a time sufficient to cook portions exterior and interior to said hamburger patty;

conveying said grill means with said hamburger patty out of said liquid cooking medium; and

ejecting said grill means from within said hamburger patty.

4,315,951

FLAVORING WITH INDANE ALKANOLS AND TRICYCLIC ISOCHROMANS

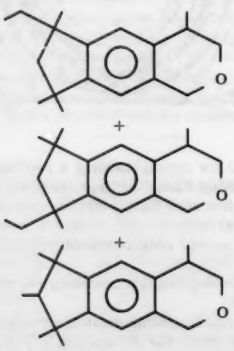
Wilhelmus J. Wiegers, Red Bank; Mark A. Sprecker, Sea Bright; Hugh Watkins, Lincroft; Manfred H. Vock, Locust, and Frederick L. Schmitt, Holmdel, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 63,518, Aug. 3, 1979, Pat. No. 4,265,818. This application Dec. 4, 1980, Ser. No. 212,886

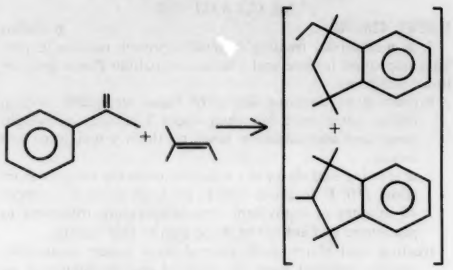
Int. Cl.³ A23L *1/226*

U.S. Cl. 426—536 **3 Claims**

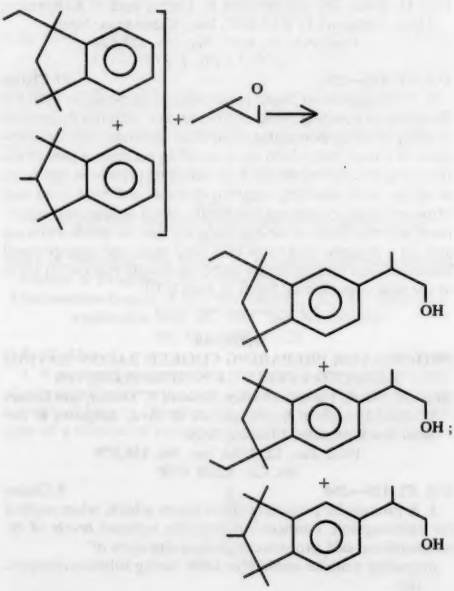
1. A process for augmenting or enhancing the aroma or taste of a foodstuff comprising the step of adding to said foodstuff from 0.0001 parts per million up to about 50 parts per million by weight based on the foodstuff of a product consisting essentially of compounds having the structures:



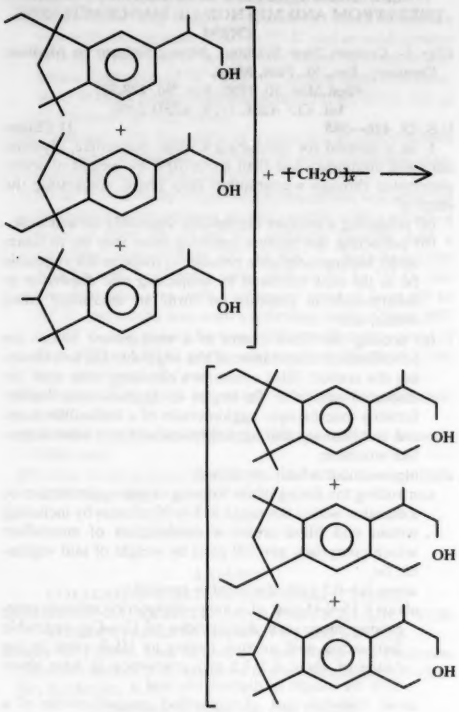
produced according to the process comprising the steps of (i) reacting isoamylene with alpha methyl styrene according to the reaction:



in the presence of a hetereogeneous solid catalyst selected from the group consisting of acid clays and acid ion exchange resins, the mole ratio of isoamylene to alpha methyl styrene being between 1:1 and 2:1; the ratio of catalyst to reactants being from 0.1% up to 8% of the total weight of alpha methyl styrene and isoamylene; the reaction temperature being between 75° C. and 250° C.; the reaction pressure being between 50 p.s.i.g. and 300 p.s.i.g.; (ii) reacting the resulting product with propylene oxide in the presence of a catalyst to produce a mixture consisting essentially of indane alkanols according to the reaction:



and (iii) reacting the mixture consisting essentially of indane alkanols with a formaldehyde or a formaldehyde source according to the reaction:



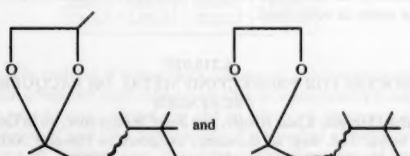
4,315,952

FLAVORING WITH DIOXOLANES

Richard M. Boden, Monmouth Beach, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Filed Dec. 4, 1980, Ser. No. 212,993
Int. Cl.³ A23L *1/226*
U.S. Cl. 426—536 2 Claims

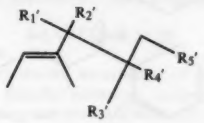
1. A process for augmenting or enhancing the aroma or taste of a foodstuff comprising the step of adding to a foodstuff from 0.05 ppm up to about 100 ppm by weight of said foodstuff of a composition of matter comprising a major proportion of compounds defined according to a structure selected from the group consisting of:



wherein in the mixture in each of the molecules one of the dashed lines represents a carbon-carbon double bond and each of the other of the dashed lines represent carbon-carbon single bonds, said composition of matter produced according to the process comprising the steps of:

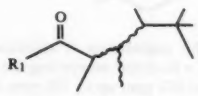
(a) dimerization of isoamylene having the structure:

in the presence of an acid catalyst to form a mixture containing a major proportion of a mixture of compounds defined according to the structure:



wherein (i) at least one of R_3' and R_4' represents methyl; (ii) the sum of the carbon atoms in R_1', R_2', R_3', R_4' and R_5' is 3; and (iii) R_1' and R_2' represent hydrogen when R_5' is methyl;

(b) reacting the resulting diisoamylene mixture with acetic anhydride to form a mixture containing a major proportion of compounds defined according to the structure:



wherein R_1 is methyl and wherein in the mixtures in each of the molecules one of the dashed lines represents a carbon-carbon double bond and the other of the dashed lines represent carbon-carbon single bonds; and

(c) reacting the resulting mixture with a compound selected from the group consisting of 1,2-propylene glycol; 1,2-propylene oxide; 1,2-ethylene glycol; and 1,2-ethylene oxide at a temperature of between 0° C. and 80° C. in the presence of a Lewis acid catalyst and the composition of matter is separated from the reaction mass by distillation either at (1) a vapor temperature of 55°–80° C., a liquid temperature of 73°–80° C. and a pressure of 3 mm Hg. or (2) at a vapor pressure of 70°–210° C., a liquid temperature of 83°–240° C. and a pressure of 3 mm Hg.

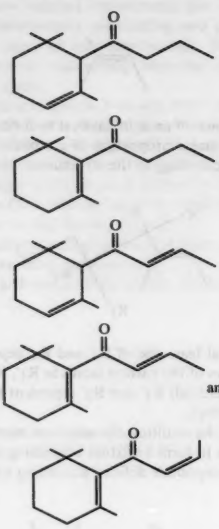
4,315,953

PROCESS FOR AUGMENTING OR ENHANCING THE AROMA OR TASTE OF RASPBERRY FLAVORED FOODSTUFFS USING 2,6,6-TRIMETHYLCYCLOHEXENE DERIVATIVES

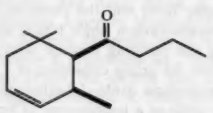
Robert W. Trenkle, Bricktown; Braja D. Mookherjee; Frederick L. Schmitt, both of Holmdel; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 969,852, Dec. 15, 1978, Pat. No. 4,292,447.
This application Feb. 27, 1981, Ser. No. 239,048
Int. Cl.³ A23L *1/235*
U.S. Cl. 426—538 2 Claims

1. A process for augmenting or enhancing the raspberry aroma or taste of a foodstuff comprising the step of adding to said foodstuff from 0.002 ppm up to about 100 ppm of a mixture of compounds defined according to the structures:



2. A process for augmenting or enhancing the raspberry aroma or taste of a foodstuff comprising the step of adding to a foodstuff from 0.002 ppm up to 100 ppm by weight of said foodstuff of the compound defined according to the structure:



4,315,954

PROCESS FOR EXTRUDING A DIETARY FIBER SNACK PRODUCT

Arie Kuipers, and Karl Schröder, both of Reitmehring, Fed. Rep. of Germany, assignors to Meggle Milchindustrie GmbH & Co. KG, Reitmehring, Fed. Rep. of Germany

Filed Oct. 9, 1979, Ser. No. 83,130

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1978, 2845571

Int. Cl.³ A23L *1/164*

U.S. Cl. 426—583 **5 Claims**

1. Process for the manufacture of an extruded dietary fiber snack product containing 10% to 80% dietary fiber and 20% to 90% of a protein plastifiable under extruding conditions, comprising the steps of

mixing the dietary fiber, which by itself is difficult to extrude, with a protein that is plastifiable under extruding conditions, the plastifiable protein being formed of a non-beneficiated protein and a beneficiating agent selected from an alkali, alkaline-earth or ammonium compound of carboxylic acid, phosphoric acid, or citric acid, or a corresponding hydroxide; or a mixture of a complexing acid with alkalinely reacting salts,

adjusting the mixture to a moisture content between 8% and 25%; and, thereafter,

extruding the mixture at a temperature of at least 100° C. to form the product.

4,315,955

FILLED CREAM, BUTTER-LIKE PRODUCT MADE THEREFROM AND METHOD OF MANUFACTURING THEM

Glen G. Cramer, New Brighton, Minn., assignor to Madison Creamery, Inc., St. Paul, Minn.

Filed Mar. 10, 1980, Ser. No. 128,587

Int. Cl.³ A23L *1/19*; A23D *3/00*

U.S. Cl. 426—585 **11 Claims**

1. In a method for producing a solid, butter-like, churned emulsion containing less than about 20% by weight of water distributed through a continuous fatty phase, comprising the steps of

(a) preparing a mixture comprising vegetable fat and milk,

(b) subjecting the mixture resulting from step (a) to steam under superatmospheric pressure to disperse the vegetable fat in the milk followed by subjecting said dispersion to subatmospheric pressure to form an emulsified filled cream, and

(c) cooling the filled cream to a temperature below the solidification temperature of the vegetable fat, and churning the cooled, filled cream in a churning zone until the dispersed vegetable fat begins to agglomerate, thereby forming macroscopic agglomerates of a butter-like material and forming said agglomerates into said solid butter-like emulsion;

the improvement which comprises:

controlling the timing of the forming of said agglomerates to a duration within the range of 8 to 60 minutes by including within said filled cream a combination of emulsifiers which comprises, per 100 parts by weight of said vegetable fat,

about 0.2–0.5 part of a lecithin emulsifier,

about 0.15–0.45 part of a mono-diglyceride mixture comprising mono and diglycerides of C_{12}–C_{22} vegetable fatty acids, said mixture having an HLB value in the range of about 2.5–3.5 and containing at least about 30% by weight of diglyceride, and

about 0.06–0.3 part of a purified monoglyceride of a C_{12}–C_{22} vegetable fatty acid, exclusive of any diglyceride contaminant thereof.

4,315,956

PROCESS FOR DEPOSITING COBALT ONDES ON A REFRACTORY-COATED PLATINUM RESISTOR COIL

Frank X. McNally, Venetia, Pa., assignor to National Mine Service Company, Pittsburgh, Pa.

Filed Apr. 21, 1980, Ser. No. 142,026

Int. Cl.³ B05D *3/14*

U.S. Cl. 427—52 **1 Claim**

1. A process for depositing cobalt oxides on a refractory-coated platinum resistor coil which comprises applying an aqueous solution of cobaltous nitrate to the surface of the refractory, passing a current through the conductor in the presence of air to raise its temperature to 500° C. to 1000° C., whereby the cobaltous nitrate is oxidized to cobalt oxides and the water is volatilized.

4,315,957

PROCESS FOR PROTECTING METAL OR LACQUERED SURFACES

Alfred Hereth; Klaus Rieger, and Josef Wildgruber, all of Gersthofen, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 25, 1980, Ser. No. 162,758

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1979, 2926197

Int. Cl.³ B05D *00/00*

U.S. Cl. 427—155 **1 Claim**

1. A process for temporarily protecting a metal or lacquered surface with a wax coating which is easily removable by treatment with a water-steam mixture, said process comprising

applying a liquid, aqueous wax-containing preservative onto said surface, said preservative consisting essentially of

(a) from 4 to 20% by weight of an acid wax based on montan wax with a drop point of 80° to 90° C. and an acid number of from 100 to 150, or an ester wax based on montan wax with a drop point of 78° to 88° C., an acid number of from 20 to 50 and a saponification number of from 100 to 150 or of a mixture of said waxes,

(b) from 0 to 12% by weight of a natural wax selected from the group consisting of carnauba wax, candelilla wax, ouricoury wax and Japan wax,

(c) from 10 to 20% by weight of a hydrocarbon wax selected from the group consisting of cake paraffin with a softening point of from 50° to 56° C., synthetic paraffin with a softening point of from 102° to 104° C., high-molecular 1-olefin with a softening point of from 73° to 75° C., micro-crystalline wax with a softening point of from 60° to 70° C., polyolefin wax with a softening point of from 100° to 130° C. and polyolefin wax oxidate with a drop point of from 100° to 115° C. and an acid number of from 15 to 30, or a mixture of said waxes,

(d) from 0.02 to 0.5% by weight of lithium or potassium hydroxide,

(e) from 0.5 to 8% by weight of an alkane sulfonate as emulsifier, and

(f) water in an amount so that the total of (a) through (f) is 100% by weight.

4,315,958

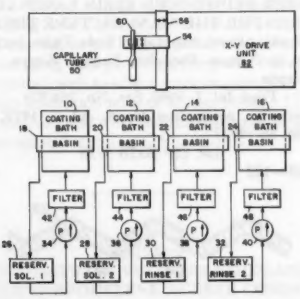
COLLOIDAL COATING FOR SMALL THREE DIMENSIONAL ARTICLES, AND PARTICULARLY FOR FUSION TARGETS HAVING GLASS SHELLS

Dennis G. Peiffer, East Brunswick, and Harry W. Deckman, Fanwood, both of N.J., assignors to The University of Rochester, Rochester, N.Y.

Filed Jun. 2, 1980, Ser. No. 155,266

Int. Cl.³ B05D *7/00, 1/18*

U.S. Cl. 427—214 **25 Claims**



1. The method of providing a coating on a closed glass shell which comprises suspending such shell in water within a capillary tube having a closed end and an open end, immersing the open end of said tube successively in a plurality of baths containing in different ones thereof a dilute suspension of positively charged colloidal particles and a dilute suspension of negatively charged colloidal particles, and at least a first and second of which baths contain water and a water displacing agent, respectively, with said tube being immersed successively in said first and second baths after being immersed in any of said charged particle suspension baths to provide a plurality of monolayers of said positively and negatively charged particles on said shell.

4,315,959

PROCESS FOR COATING MINERAL, ORGANIC OR METALLIC MICROSCOPIC OR MACROSCOPIC SUBSTRATES

Ludwig D. G. Brandts Buys, Brussels; Pierre M. J. L. Godard, Faux-Court St. Etienne; Henri C. Goossens, Hove; Joseph J. Mignard, Sint-Joris-Weert; Jean-Luc H. M. F. G. Wertz, Ceroux-Mousty, and Jean-Pierre Mercier, Leuven, all of Belgium, assignors to Wyns-Bristol S.A. Peintures, Vilvoorde and N.V. Trimetal Paint Co., Machelen, both of, Belgium

Filed Jun. 19, 1980, Ser. No. 161,176

Claims priority, application United Kingdom, Jun. 25, 1979, 22050/79

Int. Cl.³ C04B *31/02*

U.S. Cl. 427—214 **24 Claims**

1. A process for coating microscopic or macroscopic mineral, organic or metallic substrates, comprising a first step consisting in coating said substrate with a first layer of a composition comprising a liquid medium containing a polyhydroxylated polymer and a transition metal selected among the metals of the IB, IIB, IIIB, IVB, VB, VIB, VIIB and VIIIB groups of the periodic arrangement of the elements capable of forming a polymer/metal complex, a second step consisting in applying on the first layer a polymerizable material capable of being grafted on the first layer and a third step consisting in causing said polymerizable material to become grafted to the first layer by polymerization thereon.

4,315,960

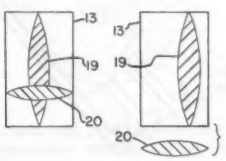
METHOD OF MAKING A THIN FILM

Kenzo Ohji, Hirakata; Osamu Yamazaki, Suita; Kiyotaka Wasa, Nara, and Shigeru Hayakawa, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed May 28, 1980, Ser. No. 154,080

Int. Cl.³ C23C *13/00, 15/00*

U.S. Cl. 427—248.1 **6 Claims**



1. A method of making a thin film comprising the step of vapor depositing a source material onto a substrate with an apparatus having first and second mask plates for equalizing the deposition rate, located between said source material and said substrate, said mask plates and said substrate being moved relatively to each other, wherein said substrate and said source material are stationary and said mask plates reciprocate, the deposition rate being equalized in two directions perpendicular to each other by a combination of a variation of the width contour of said mask plates, the variation of the speed of said reciprocation and the first mask plate reciprocating in the direction perpendicular to the reciprocating direction of the second mask plate.

4,315,961
PRODUCTION OF STRIKING SURFACES FOR MATCHES

Wilhelm Adam, Neu-Isenburg; Hannsjörg Ulrich, Erftstadt; Franz-Josef Dany, Erftstadt, and Gerd Kalteyer, Erfstadt, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 9, 1980, Ser. No. 167,219

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1979, 2928140

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—385.5 **11 Claims**

1. In the process for making striking surfaces for matches, wherein

red phosphorus,

abrasive agents,

a binder comprised of aqueous urea/formaldehyde or melamine/formaldehyde-condensates

are made into an aqueous suspension, the suspension is applied on to a striking surface substrate and the substrate is heat-treated,

the improvement which comprises: admixing the suspension, based on the solid matter content of the condensates used as binder, with 5 to 20 weight %, calculated as solid matter, of an agent cross-linking the amine resin, the cross-linking agent being a polyester which is the polycondensation product of divalent dicarboxylic acids and dihydric alcohols or derivatives of the said acids and alcohols, or copolymer produced by subjecting an acryl and/or methycryl ester to copolymerization with vinyl acetate in a ratio by weight of 1:9 to 9:1, the copolymer having optionally up to 20 weight % based on the monomeric ester proportion of acrylic acid or methacrylic acid polymerized thereinto; and establishing, in the resulting mixture, a pH-value within the range 6.5 to 8.0, in the event of the cross-linking agent being a copolymer, or a pH-value within the range 7 to 11, in the event of the cross-linking agent being a polyester.

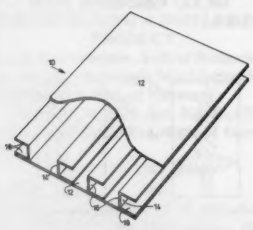
4,315,962
INSULATION BATTS

Ralph W. Skoien, 53 Grove Rd., Rosanna, Victoria, Australia

Continuation-in-part of Ser. No. 964,044, Nov. 27, 1978, abandoned. This application Jul. 8, 1980, Ser. No. 166,790

Int. Cl.³ B32B *9/06, 3/20, 3/22*

U.S. Cl. 428—12 **4 Claims**



1. An insulation batt comprising:

two rectangular sheets of heat reflecting material; and

a plurality of strips secured to said sheets and positioned between said sheets and securing said sheets in overlapping substantially parallel relation, said strips extending in substantially parallel spaced relation with and between said sheets, said strips permitting relative movement of said sheets whereby either one or both of the sheets can be moved from a first position in which the sheets are in substantially face to face contact but wherein one longitudinal edge portion of each sheet, which extends in the same direction as said strips, overlaps a longitudinal edge portion of the other strip, to a second position in which the sheets are spaced from one another and wherein the said longitudinal edge portions no longer overlap, said second position providing an insulating air space between the sheets, said strips and said sheets being formed of laminated paper and metal foil and wherein:

said strips are made of a continuous strip of material shaped, when said sheets are in said second position, to form a C-shaped channel with squared corners, the center portion of said channel extending edgewise between said sheets, and each leg portion of said channel extending parallel to, and affixed to the respective one of, said sheets;

said batt is of predetermined width, and said channels extend lengthwise thereof; and

the strips adjacent the longitudinal edges of said batt have their channel legs extending in an outwardly direction.

4,315,963
THERMOPLASTIC FILM WITH INTEGRAL RIBBED PATTERN AND BAG THEREFROM

Carl B. Havens, Newark, Ohio, assignor to The Dow Chemical Co., Midland, Mich.

Division of Ser. No. 75,477, Sep. 14, 1979, Pat. No. 4,265,853. This application Jul. 18, 1980, Ser. No. 170,217

Int. Cl.³ B65D *85/30*

U.S. Cl. 428—35 **5 Claims**

1. A thermoplastic film having an integral ribbed pattern thereon, said ribs having a rib sharpness sufficient to permit a large number of ribs per film width to be present in said pattern, the ribs having a thickness at least twice that of the film body between the ribs, the relatively thin film body between the ribs being oriented for toughness, said ribs preventing tear propagation should said film body become ruptured.

4,315,964
GLASS FIBER REINFORCED RESIN LAMINATE AND A PROCESS FOR THE MANUFACTURE THEREOF

Yukinori Ozaki, Akashi, and Hidemi Soda, Daito, both of Japan, assignors to Nippon Shokubai Kagaku Kogyo, Co., Ltd., Osaka, Japan

Filed Jul. 1, 1980, Ser. No. 164,979

Claims priority, application Japan, Jul. 6, 1979, 54-85021; Jun. 5, 1980, 55-74927

Int. Cl.³ B32B *3/28*

U.S. Cl. 428—182 **27 Claims**

1. A glass fiber reinforced resin laminate comprising a cured layer of glass fiber reinforced resin using an unsaturated polyester resin (I) and a surface layer of polyvinyl fluoride formed on at least one of the opposite surfaces of the aforementioned cured layer, wherein said unsaturated polyester resin (I) comprises (A) 40 to 80% by weight of an unsaturated polyester derived from an acid moiety containing 20 to 90 mol% of at least one member selected from the group consisting of α,β-unsaturated polybasic acids and anhydrides thereof and a polyhydric alcohol moiety containing 10 to 40 mol% of diethylene glycol and (B) 60 to 20% by weight of an ethylenically unsaturated monomer containing an amount falling within the range of 0.1 to 0.6 mol, based on mol of the diethylene glycol used in the derivation of said unsaturated polyester (A), of an acrylic

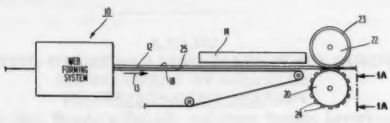
ester or methacrylic ester, and, on being cured, exhibits a refractive index within the range of 1.50 to 1.56 at 25° C.

4,315,965

METHOD OF MAKING NONWOVEN FABRIC AND PRODUCT MADE THEREBY HAVING BOTH STICK BONDS AND MOLTEN BONDS

Charles R. Mason, Hammonton; David K. Osteen, Williamstown, and Lawrence Vaalburg, Vineland, all of N.J., assignors to Scott Paper Company, Philadelphia, Pa.

Filed Jun. 20, 1980, Ser. No. 161,270
Int. Cl.[3] D04H *1/54, 3/14*
U.S. Cl. 428—198 30 Claims



1. A method of autogenously bonding a nonwoven web formed predominantly of thermoplastic fibers, characterized by the steps of directing heat into the web from only one surface thereof to preheat the web, and then directing the preheated web through a bonding nip formed between opposed rolls, one of said rolls being hotter than the other roll, being capable of heating the web surface it engages to a temperature above the melt point of the thermoplastic fibers and being positioned to engage the surface of the web opposite the one into which heat was directed during the preheating operation; said web being preheated by means completely independent of the opposed rolls that form the bonding nip.

14. A nonwoven web made according to the method of claim 1.

26. An autogenously bonded nonwoven web, said web, prior to bonding being weaker in the cross-machine-direction than in the machine-direction, characterized in that the autogenous bonds on one surface include substantially continuous molten bonds extending in a direction, in the plane of the web, for reinforcing the web in the cross-machine-direction, said molten bonds extending only partially through the thickness of the web, said bonded web having a cross-machine-direction wet tensile energy absorption level of at least about 3.15 m-kg/m^2 (80 inch-grams/in^2) and a cross-machine-direction wet tensile strength exceeding 9.83 kg/m (250 gms/in.).

4,315,966

FIBROUS SUBSTRATE VULCANIZATION-ADHERED TO ETHYLENE-PROPYLENE RUBBER COMPOSITION

Takeshi Akiyama; Toshiyuki Koide, and Mutsuo Nagasawa, all of Yokkaichi, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Oct. 16, 1980, Ser. No. 197,679
Claims priority, application Japan, Oct. 22, 1979, 54/135303
Int. Cl.[3] B32B *5/00, 25/00, 25/02*
U.S. Cl. 428—260 10 Claims

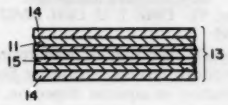
1. An article obtained by subjecting to vulcanizing-adhesion a fibrous substrate and an ethylene-propylene rubber composition comprising 100 parts by weight of an ethylene-propylene rubber, 5–40 parts by weight of polyisoprene having an intrinsic viscosity [η] of 0.2–1.5 dl/g as measured in toluene at 30° C. and a total 1,2- and 3,4-configuration content of 30% or less, and a vulcanizing agent.

4,315,967

MAGNESIUM OXYCEMENT/FIBROUS WEB COMPOSITES

William Prior, Newark, Ohio, and Richard S. Lindstrom, Reading, Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Filed Feb. 1, 1980, Ser. No. 117,540
Int. Cl.[3] B32B *15/14*
U.S. Cl. 428—285 25 Claims



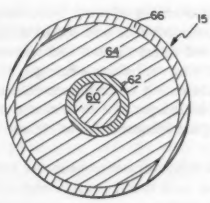
1. A composite material comprising a laminate formed of bonded, distinct alternating layers of a cured magnesium oxycement and a fibrous web said cured magnesium oxycement in said laminate being formed by laying down a liquid reactive water slurry and curing said slurry, the composition of said slurry being such as to retain essentially all of the water of said slurry in said cured magnesium oxycement.

4,315,968

SILICON COATED SILICON CARBIDE FILAMENTS AND METHOD

Raymond J. Suplinskas, Haverhill, and Thomas W. Henze, Lawrence, both of Mass., assignors to Avco Corporation, Wilmington, Mass.

Filed Feb. 6, 1980, Ser. No. 118,954
Int. Cl.[3] B32B *9/00*; D02G *3/00*
U.S. Cl. 428—367 6 Claims



1. A high strength, high modulus threadlike article useful in forming composite matrix structures comprising a silicon carbide substrate filament having applied thereto a thin coating of silicon-rich material wherein the ratio of C/Si varies from one (stoichiometric) at the interface of the substrate filament to zero (pure silicon) at the exterior surface.

3. A method of producing a silicon-rich coating on a silicon carbide filament substrate wherein the ratio of C/Si coating varies from one at the interface of the coating and filament to zero at the surface comprising the steps of:

vapor depositing silicon carbide on a filament substrate moving through a reactor; and

adding a chlorosilane to the reactor downstream of where silicon carbide is deposited on the substrate and vapor depositing a silicon-rich silicon carbide coating from the chlorosilane on the silicon carbide deposit.

4,315,969

LINEAR SATURATED POLYESTERS OF PHOSPHORIC ACID AND HALOGENATED DIOLS AS FLAME-RETARDANT ADDITIVES AND COATINGS

Robert B. Login, and David D. Newkirk, both of Woodhaven, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 933,986, Aug. 16, 1978, Pat. No. 4,259,222. This application Jul. 20, 1979, Ser. No. 59,435

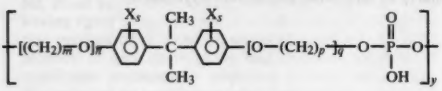
The portion of the term of this patent subsequent to Feb. 16, 1999, has been disclaimed.

Int. Cl.[3] **C08K** *5/52*; **C08L** *67/02*

U.S. Cl. 428—395 **4 Claims**

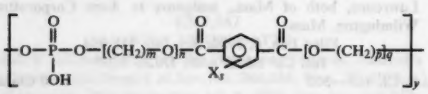
1. The process of producing a flame-retardant polyester textile fiber comprising coating a polyester fiber with an organic solvent solution, an aqueous dispersion, or an aqueous solution of a phosphorus- and halogen-containing polymer selected from the group consisting of at least one of

A. a saturated polyester comprising the reaction product of a phosphorus acid reactant and either a halogenated bis-hydroxyalkyl aromatic diol or a non-oxyalkylated halogenated aromatic diol or mixtures thereof having the formula:



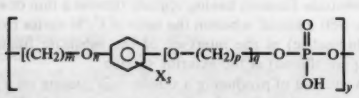
wherein X attached to the aromatic ring represents a halogen atom; s is an integer of 1 to 4; m and p are integers of 2 to 6; n and q are 0 or integers of 1 to 10; and y is an integer of 2 to 100;

B. a saturated polyester comprising the reaction product of a phosphorus acid reactant and a halogenated bis-hydroxyl aromatic diacid having the formula:



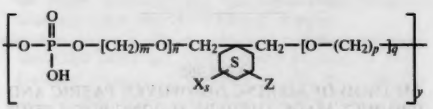
wherein said diacid is selected from the group consisting of phthalic, isophthalic, and terephthalic acids, phthalic anhydride, and esters thereof and wherein X attached to the aromatic ring represents a halogen atom selected from the group consisting of bromine, chlorine, and mixtures thereof; s is an integer of 1 to 4; m and p are integers of 2 to 6; n and q are integers of 1 to 10; and y is an integer of 2 to 100;

C. a saturated polyester comprising the reaction product of a phosphorus acid reactant and either a bis-hydroxyalkyl halogenated diphenol or a non-oxyalkylated halogenated dihydroxy benzene or mixtures thereof having the formula:



wherein the X attached to the aromatic ring represents a halogen atom selected from the group consisting of bromine, chlorine, and mixtures thereof; s is an integer of 1 to 4; m and p are integers of 2 to 6; n and q are 0 or integers of 1 to 10; and y is an integer of 2 to 100; and

D. a saturated polyester comprising the reaction product of a phosphorus acid reactant product of a phosphorus acid reactant and either a halocyclohexane 1,1-dimethanol or oxyalkylated derivative thereof or mixtures thereof having the formula:



wherein the X attached to the saturated ring represents a halogen atom selected from the group consisting of chlorine, bromine and mixtures thereof; s is an integer of 1 to 2; Z represents hydrogen, an alkyl radical having 1 to 6 carbon atoms or phenyl; m and p are integers of 2 to 6; n and q are 0 or integers of 1 to 10; and y is an integer of 2 to 100.

4,315,970

ADHESION OF METALS TO SOLID SUBSTRATES

James B. McGee, Sanford, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 120,197, Feb. 11, 1980, abandoned. This application Sep. 22, 1980, Ser. No. 189,433

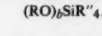
Int. Cl.[3] **B32B** *15/08, 17/10*

U.S. Cl. 428—412 **54 Claims**

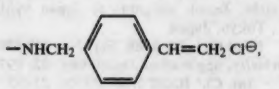
1. A method of forming an adherent metal surface on a substrate by

(I) treating a solid substrate with at least one organofunctionalsilane, or the partial hydrolyzates thereof, having the general formula

or a mixture of an organofunctional silane or the partial hydrolyzates thereof with a different organosilane, or the partial hydrolyzates thereof, which has the general formula



in which formulae R is an alkyl radical of 1–4 carbon atoms, R′ is a difunctional hydrocarbon radical having from 1–12 carbon atoms or a $—CH_2CH_2CH_2NHCH_2CH_2—$ radical X is an $—NH_2$,



—SH, OH, or Cl radical, R″ is an -(-R′X) radical, a and b each have a value of 2 or 3, c has a value of 0 or 1 and a+c=3;

(II) drying the silane treated surface until the majority of volatile materials have been removed and thereafter,

(III) vapor depositing a metal on the silane treated surface to form a thin continuous film or coating thereon.

4,315,971

SOUND DEADENING

Peter A. J. Taylor, and George W. Hammond, both of Peterborough, England, assignors to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

Filed May 23, 1980, Ser. No. 152,863
Claims priority, application United Kingdom, May 23, 1979, 18057/79
Int. Cl.[3] B32B *27/06*; B05D *1/02*
U.S. Cl. 428—419 12 Claims

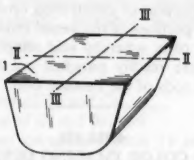
1. A method of sound deadening an article by suppressing emission of sound by vibration of said article comprising applying to the surface of the article a first layer of a resilient material selected from the group consisting of polysulphide, silicone and polyurethane rubber, and applying to said first layer a second layer consisting of a continuous material selected from the group consisting of zinc, aluminum, and ferrous metal and their alloys.

4,315,972

CASTING WHOSE MOLDING TAKES PLACE DURING ITS RECOVERY BY MEANS OF FILTRATION-DEHYDRATION

Chatty Rao, Bensberg-Refrath, and Hans Bender, Leverkusen, both of Fed. Rep. of Germany, assignors to Klockner-Humboldt-Deutz AG, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 805,011, Jun. 9, 1977, abandoned. This application Jul. 18, 1977, Ser. No. 806,530
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1976, 2626603
Int. Cl.[3] C22B *1/14, 1/16, 1/22*; B32B *9/04*
U.S. Cl. 428—542 8 Claims



1. A casting consisting of a dehydrated agglomerate of a particulate metal ore material having a shape such that it has at least one projection in a plane perpendicular to its major dimension in the form of a trapezoid whose sides which include angles greater than 90° are joined by means of a curved surface, said casting having a thickness between 3 and 25 mm. and an edge length measured perpendicular to the thickness between 5 and 30 mm.

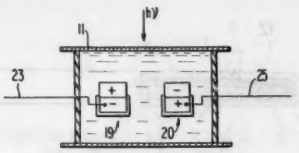
4,315,973

PHOTOELECTROCHEMICAL CELL ASSEMBLY HAVING ELECTROLYTE CONTACTS BETWEEN SEMICONDUCTOR SURFACES

Joost Manassen; Gary Hodes, and David Cahen, all of Rehovot, Israel, assignors to Yeda Research and Development Co., Ltd., Rehovot, Israel

Filed Aug. 22, 1980, Ser. No. 180,472
Claims priority, application Israel, Nov. 20, 1979, 58747
Int. Cl.[3] H01M *6/36*
U.S. Cl. 429—111 14 Claims

1. An assembly comprising at least two separated semiconductor electrodes, each of said semiconductor electrodes having a positive and negative surface with a photoactive junction therebetween, one of said surfaces of each electrode being exposed for contact with an electrolyte and the other being isolated from said electrolyte, and said electrolyte for electrically connecting in series said exposed surfaces of opposite polarity of said at least two semiconductor electrodes, said electrolyte comprising at least one redox couple capable of a reversible redox reaction with one exposed surface of each of said semiconductor electrodes whereby the composition of



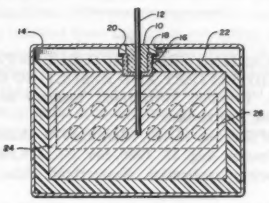
said electrolyte remains substantially unchanged as charge is passed between said electrodes.

4,315,974

ELECTROCHEMICAL CELL WITH PROTECTED ELECTRICAL FEEDTHROUGH

Lee F. Athearn, Fridley, and William J. Morrissey, Champlin, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed May 1, 1978, Ser. No. 901,596
Int. Cl.[3] H01M *2/06*
U.S. Cl. 429—181 7 Claims



1. An electrochemical cell comprising a case including electrode means; electrode lead-wire means extending into the case from the exterior thereof to contact the electrode means; glass seal means around the lead-wire means at its point of entry into the case with an inner glass portion extending inside the case, and ceramic cover means surrounding the lead-wire means and extending between the glass and the electrode means, the ceramic cover means being fused to the inner glass portion of the glass seal means inside the case and shielding those inner portions of the glass inside the case which are exposed to cell contents which tend to react with the glass whereby reaction between the cell contents and the glass and the cell contents and the lead-wire means is avoided.

4,315,975

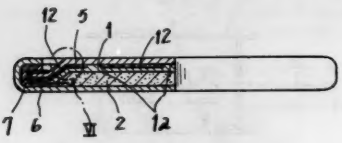
SOLID-STATE LITHIUM-IODINE PRIMARY BATTERY

Satoshi Sekido, Yawata; Tadashi Sotomura, Kashiwara, and Muneaki Nakai, Tokonaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 6, 1980, Ser. No. 175,734
Claims priority, application Japan, Aug. 15, 1979, 54-103728; Dec. 28, 1979, 54-171154
Int. Cl.[3] H01M *6/18*
U.S. Cl. 429—191 5 Claims

1. A substantially anhydrous cell comprising a lithium anode, a cathode comprising iodine particles not more than 77 μm in diameter and a charge transfer complex consisting of

iodine and a 1-normal-alkyl-pyridinium iodide, and a lithium iodide based solid electrolyte formed on the lithium anode



surface by contact of the lithium anode with the iodine cathode in assembling the cell.

4,315,976

COATED ACTIVE ANODES

Alfred L. Conte, Cleveland, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 21, 1979, Ser. No. 106,024

Int. Cl.³ H01M 6/14

U.S. Cl. 429—194 **13 Claims**

1. An active anode member selected from the group consisting of lithium, sodium and calcium, coated on its surface with an electrically nonconductive and chemically and electrochemically inert particulate material in an amount between about 0.1 milligram per square centimeter and about 8 milligram per square centimeter.

4,315,977

MOLD FOR CASTING GRID FOR TUBULAR PLATES OF A LEAD-ACID BATTERY AND RESULTING CASTING

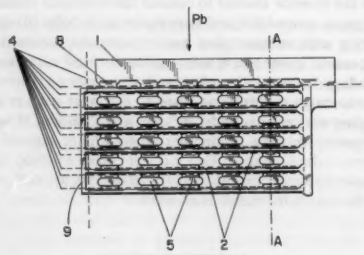
Paul Ruetschi, Yverdon, Switzerland, assignor to Leclanché S.A., Yverdon, Switzerland

Continuation of Ser. No. 16,439, Mar. 1, 1979, abandoned. This application Aug. 18, 1980, Ser. No. 179,084

Claims priority, application Switzerland, Mar. 6, 1978, 2426/78

Int. Cl.³ B22C 9/22; B22D 25/04; H01M 4/73

U.S. Cl. 429—233 **7 Claims**



1. A mold for casting grids for tubular plates of a lead-acid battery, the mold having generally complementary halves comprising:

an array of long, parallel grid rod channels to form parallel grid rods for a lead-acid battery grid;

said array of grid rod channels being connected at both ends thereof with end portion channels, one of said end portion channels forming a connection end portion to connect together the parallel grid rods at one end of a finished grid, the other of said end portion channels forming a temporary end portion connector that is subsequently removed from between the other ends of the parallel grid rods of the finished grid;

a plurality of temporary intermediate large connector portion channels between said grid rod channels to form a plurality of temporary intermediate connecting portions between said parallel grid rods;

a generally horizontal runner channel at the top of said mold, said runner channel having a plurality of gates that are generally perpendicular to the grid rod channels and that open into the top end of each of said temporary intermediate connector channels; and

each of said temporary intermediate connector channels having a thick portion between said grid rod channels and having a constricted location between each of said thick portions and said grid rod channels, whereby said temporary intermediate connectors that are formed upon casting are subsequently readily removed from between the parallel grid rods.

4. A lead alloy casting designed to become a finished grid for a tubular plate in a lead-acid battery, said casting comprising:

an array of long, parallel grid rods for a lead-acid battery;

a connection end portion connecting together each of said plurality of long, parallel grid rods at one end thereof in the finished grid;

a temporary end portion connecting together each of said plurality of long, parallel grid rods at an opposite end thereof, said temporary end portion being removed in the finished grid;

a plurality of temporary intermediate connecting portions connecting said parallel grid rods at locations between said connection end portion and said temporary end portion;

a runner having a plurality of gate members connected to each of said plurality of temporary intermediate connecting portions; and

each of said temporary intermediate connecting portions has a portion of thickened cross-section between said grid rods and a portion of constricted cross-section between each of said portions of thickened cross-section and each of said grid rods, whereby said temporary intermediate connectors are readily punched out from between the parallel grid rods of the finished grid.

4,315,978

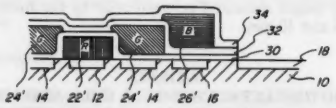
SOLID-STATE COLOR IMAGING DEVICE HAVING A COLOR FILTER ARRAY USING A PHOTOCROSSLINKABLE BARRIER

Susan E. Hartman, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 6, 1980, Ser. No. 127,605

Int. Cl.³ G03C 1/84

U.S. Cl. 430—4 **12 Claims**



1. A solid-state color imaging device comprising a support having a surface comprising solid-state radiation-sensitive elements and bonding pad areas and, superimposed on said radiation-sensitive elements, in microregistration, a color filter array having at least three sets of filter elements, each filter element being a dyed island of a dyeable composition having an area less than about 1.0×10^{-8} m^2, said color filter array comprising:

a first set of filter elements on the surface of said device,

a second set of filter elements separated from said surface by a layer of a crosslinked dye-impermeable polymer and

a third set of filter elements separated from the surface of the device by two layers of a cross-linked dye-impermeable polymer,

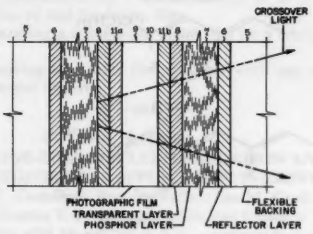
said bonding pad areas being substantially free from said dye-impermeable polymer.

4,315,979

RARE EARTH OXYHALIDE PHOSPHOR AND X-RAY IMAGE CONVERTERS UTILIZING SAME

Marjorie J. Brines, South Euclid, and Jacob G. Rabatin, Chardon, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 19, 1980, Ser. No. 218,199
Int. Cl.³ G01J 1/58; C09K 11/46
U.S. Cl. 430—6 16 Claims



6. An improved multilayer x-ray screen construction which comprises:

(a) a photographic film having emulsion layers disposed on each major surface and separated by an optically transparent support,

(b) a pair of phosphor layers being positioned on each side of said photographic film to form a sandwich configuration, and

(c) each of said phosphor layers comprising an improved brightness oxyhalide phosphor having the following structural formula:

$LnOX:T_x$

wherein

Ln is one or more of La and Gd,

X is one or more of Cl and Br, and

T_x is an activator ion selected from Tb and Tm, including mixtures thereof;

consisting essentially of recrystallized phosphor crystals in the average median particle size range not below about 2 microns and not greater than about 16 microns and being shaped as plate-like particles having a length to thickness ratio no greater than about 10 to 1, said phosphor exhibiting improved image sharpness and reduced crossover problem.

4,315,980

ELECTROPHOTOGRAPHIC MEMBER WITH METALLOCENE CONTAINING OVERLAYER

Shigeru Sadamatsu; Kohichi Yamamoto, and Kazuaki Ohmi, all of Minami-ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 4, 1980, Ser. No. 137,191
Claims priority, application Japan, Apr. 9, 1979, 54-42118
Int. Cl.³ G03G 5/14
U.S. Cl. 430—58 10 Claims

1. An electrophotographic member in which a photoconductive layer and a protective layer are superposed in order on a photoconductive support, wherein the improvement comprises:

said protective layer comprising at least one metallocene or a compound having at least one metallocene nucleus in its molecular structure and at least one electron acceptor dispersed in a binder resin containing a

bond, said protective layer having a thickness of about 0.5 to 50μ.

4,315,981

ORGANIC DOUBLE LAYER ELECTROPHOTOGRAPHIC RECORDING MATERIAL

Wolfgang Wiedemann, Geisenheim-Johannisberg, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 758,896, Jan. 13, 1977, abandoned, which is a continuation of Ser. No. 587,771, Jun. 17, 1975, abandoned, which is a continuation of Ser. No. 354,184, Apr. 25, 1973, abandoned. This application Mar. 2, 1978, Ser. No. 882,706
Int. Cl.³ G03G 5/06
U.S. Cl. 430—59 1 Claim

1. An electrophotographic recording material consisting essentially of an electroconductive support material and a photoconductive double layer of organic materials which is composed of a tightly packed, homogeneous, uniform, opaque, unoriented, charge carrier producing dyestuff layer of a compound having an aromatic or heterocyclic polynuclear quinone ring system or the substitution product thereof, selected from the group consisting of dibenzopyrene quinone, anthanthrone, pyranthrone, dibenzanthrone and flavanthrone, substituents being selected from the group consisting of halogen and alkoxy groups, and a transparent top layer of 2,5-bis-(4-diethylaminophenyl)-oxdiazole-1,3,4, and a binder in a ratio by weight of about 1:1, which recording material is useful in an electrophotographic copying process with negative charging of the top layer, if an electron donating compound is used.

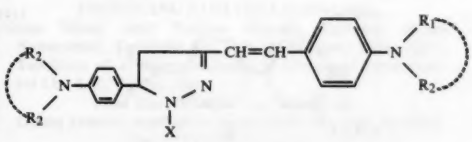
4,315,982

STYRYL PYRAZOLINE COMPOUNDS, PROCESS FOR PRODUCTION THEREOF, AND ELECTROPHOTO GRAPHIC MATERIAL COMPRISING SAID COMPOUNDS

Shozo Ishikawa, Tokyo; Shoji Masubuchi, Naka, and Shigeki Ohkawa, Tokyo, all of Japan, assignors to Copyer Co., Ltd., Tokyo, Japan

Filed Feb. 24, 1981, Ser. No. 237,810
Claims priority, application Japan, Sep. 4, 1979, 53-107600
Int. Cl.³ G03G 5/06, 5/14
U.S. Cl. 430—59 24 Claims

1. An electrophotographic material comprising a support having thereon at least one layer comprising a binder and a compound of the formula:



wherein R_1 and R_2 are the same or different and are an alkyl group or combine with the nitrogen atom to form a 5- or 6-membered ring, and X is a pyridyl group, a quinolyl group, or a pyridyl or quinolyl group substituted by at least one alkyl or alkoxy group.

4,315,983

2,6-DI-TERT-BUTYL-4-SUBSTITUTED THIOPYRYLIUM SALT, PROCESS FOR PRODUCTION OF SAME, AND A PHOTOCONDUCTIVE COMPOSITION CONTAINING SAME

Koichi Kawamura; Harumi Katsuyama, and Hideo Sato, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

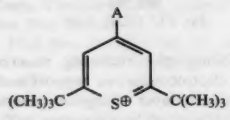
Filed Jul. 14, 1980, Ser. No. 168,855

Claims priority, application Japan, Jul. 13, 1979, 54-88317; Jul. 13, 1979, 54-88318; Aug. 21, 1979, 54-105546; Aug. 21, 1979, 54-105547; Aug. 31, 1979, 54-110457

Int. Cl.³ G03G 5/09

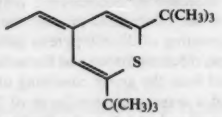
U.S. Cl. 430—70 **47 Claims**

1. A 2,6-di-tert-butyl-4-substituted thiopyrylium salt represented by Formula (I):

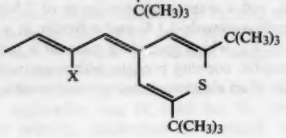


(I)

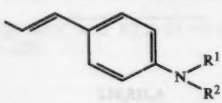
wherein A represents



(1)

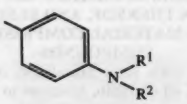


(2)



(3)

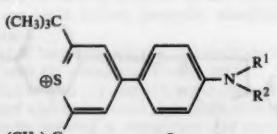
or



(4)

wherein $Z^{\ominus}$ is an anion, X is a hydrogen atom, an aryl group, a substituted aryl group or an alkyl group, and R^1 and R^2 are the same or different and represent alkyl groups.

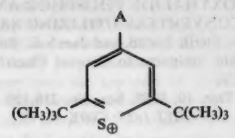
5. 2,6-di-tert-butyl-4-(4-disubstituted aminophenyl)thiopyrylium salt represented by formula I-(4):



I-(4)

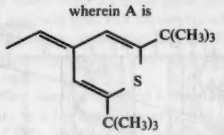
wherein $Z^{\ominus}$ is an anion, and R^1 and R^2 are the same or different and represent alkyl groups.

32. The photoconductive composition comprising a photoconductor and, as a sensitizer a 2,6-di-tert-butyl-4-substituted thiopyrylium salt represented by formula (I):

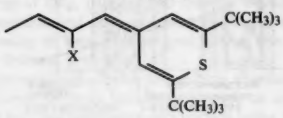


(I)

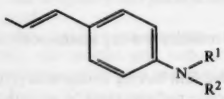
wherein A is



(1)

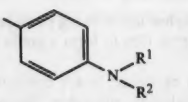


(2)



(3)

or



(4)

wherein $Z^{\ominus}$ is an anion, X is a hydrogen atom, an aryl group, a substituted aryl group or an alkyl group and R^1 and R^2 are the same or different and include an alkyl group.

4,315,984

METHOD OF PRODUCING A SEMICONDUCTOR DEVICE

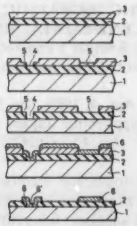
Shinji Okazaki, Urawa; Kozo Mochiji, Tachikawa; Susumu Takahashi, Hinodemachi, and Fumio Murai, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 11, 1980, Ser. No. 176,799

Claims priority, application Japan, Aug. 13, 1979, 54-102245

Int. Cl.³ B05D 3/06

U.S. Cl. 430—296 **5 Claims**



1. A method of producing a semiconductor device comprising the steps of:

(a) depositing in succession an insulating film and a resist film reacting to an electron beam onto a surface of a semiconductor substrate;

(b) irradiating that region of said resist film in which a contact is to be formed and that region thereof in which an interconnection is to be formed, with the electron beam in an optimum dose for said resist film and in a dose less than

said optimum dose respectively, thereby to increase solubilities of the irradiated regions;

(c) developing said resist film, to form an opening extending to said insulating film in said region of said resist film in which said contact is to be formed and simultaneously to reduce a film thickness of said region of said resist film in which said interconnection is to be formed;

(d) performing etching to remove the exposed region of said insulating film so as to form a contact hole, and simultaneously to remove the resist film in said region in which said interconnection is to be formed, so as to expose a surface of said insulating film;

(e) depositing a conductive metal film on a whole surface; and

(f) removing said resist film together with said metal film deposited thereon.

4,315,985

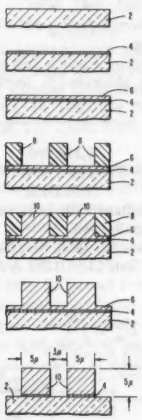
FINE-LINE CIRCUIT FABRICATION AND PHOTORESIST APPLICATION THEREFOR

Eugene E. Castellani, Putnam Valley; Ian M. Croll, Pleasantville; Aloysius T. Pfeiffer, Peekskill, and Lubomyr T. Romankiw, Briarcliff Manor, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 695,225, Jun. 11, 1976, abandoned, which is a division of Ser. No. 510,954, Oct. 2, 1974, abandoned, which is a continuation of Ser. No. 311,006, Nov. 30, 1972, abandoned. This application Dec. 28, 1977, Ser. No. 865,344

Int. Cl.³ G03C *5/00, 1/76*

U.S. Cl. 430—314 **15 Claims**



1. A process of fabricating ultra-narrow line circuitry with a thickness to width ratio of greater than 0.4, comprising the steps of:

depositing a conductive metal on a substrate;

flooding a positive liquid photoresist onto the conductive metal;

providing a predetermined time for partially drying the liquid photoresist between resist application and spinning for a measured predetermined stationary drying interval which is varied in duration as a known function of the desired ultimate thickness of the resist at the completion of the process;

spinning the photoresist at a speed on the order of 2000 rpm subsequent to the end of said predetermined time to produce a uniform coating with the thickness being proportional to the amount of time allowed for partial drying;

baking, exposing through a suitable mask and developing said photoresist so as to produce a pattern of the desired circuit;

electroplating the desired circuit pattern onto said conductive metal to a thickness on the order of the thickness of said resist;

removing the resist; and

etching the conductive metal between the circuitry.

4,315,986

PHOTOGRAPHIC EMULSIONS AND ELEMENTS CAPABLE OF FORMING DIRECT-POSITIVE IMAGES

Roger M. Baralle, Champigny-sur-Marne; Marcel A. Compere, Fontenay-sous-Bois; Maurice E. Pfaff, Le Perreux-sur-Marne, and Claude G. Goumont, Chelles, all of France, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 10, 1980, Ser. No. 205,069

Int. Cl.³ G03C *1/485*

U.S. Cl. 430—411 **16 Claims**

1. A silver halide emulsion comprised of silver halide grains capable of forming an internal latent image and, adsorbed to the surface of said silver halide grains, a diphenylmethane nucleating agent.

9. A photographic element comprising a support and a silver halide emulsion according to claim **1, 2, 3, 4, 5, 6, 7,** or **8** forming a layer on said support.

4,315,987

CONTINUOUS FERMENTATION PROCESS

Werner C. Muller, Dobbs Ferry, N.Y., and Franklyn D. Miller, Cincinnati, Ohio, assignors to National Distillers & Chemical Corp., New York, N.Y.

Filed Mar. 12, 1980, Ser. No. 129,516

Int. Cl.³ C12P *7/14*

U.S. Cl. 435—162 **9 Claims**

1. A process for the production of ethanol by continuous fermentation which comprises carrying out fermentation upon an aqueous solution of fermentable sugar and fermentable sugar oligomer in a series of fermentation vessels, the fermentation employing at least two different strains of ethanol-producing yeast, one of which provides a relatively high rate of conversion of fermentable sugar to ethanol and the other of which provides a relatively high rate of conversion of fermentable sugar oligomer to ethanol, each of said strains of yeast being separately employed in its own fermentation vessel from which said yeast is separately recovered therefrom and recycled thereto.

4,315,988

THERMOPHILIC COLLAGENASES, THERMOPHILIC BACTERIA CAPABLE OF PRODUCING THERMOPHILIC COLLAGENASES, AND PROCESS FOR PRODUCING SAID COLLAGENASES

Naoto Miwa, Ami; Yoshiro Masuda, Kashiwa; Seiichi Kawarabuki; Toshiyuki Sai, both of Ami, and Takao Saito, Tsuchiura, all of Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Filed Mar. 30, 1979, Ser. No. 25,748

Claims priority, application Japan, Mar. 30, 1978, 53-36018

Int. Cl.³ C12N *9/54, 1/20*

U.S. Cl. 435—221 **14 Claims**

1. A process for producing thermophilic collagenase, which comprises aerobically cultivating a thermophilic collagenase-producing thermophilic bacterium in a culture medium therefor, said thermophilic collagenase-producing thermophilic bacterium being a thermophilic bacterium of the genus Bacillus

which grows at a temperature of 42° to 74° C. and a pH of 5.0 to 9.0, and recovering thermophilic collagenase from the culture broth, said thermophilic collagenase being such that it does not substantially lose collagenase activity even when maintained for one hour at a temperature of 60° C. in the presence of a calcium ion at a pH in the range of 6.5 to 8.5, and has a molecular weight, determined by gel filtration, between those of cytochrome C and ovalbumin.

9. A novel thermophilic collagenase which does not substantially lose collagenase activity even when maintained for 1 hour at a temperature of 60° C. in the presence of a calcium ion at a pH in the range of 6.5 to 8.5, and which has a molecular weight, determined by gel filtration, between those of cytochrome C and ovalbumin.

4,315,989
BIOLOGICALLY PURE CULTURE OF THE MICROORGANISM NOCARDIA ATCC31280

Eiji Higashide, Takarazuka; Mitsuko Asai, Osaka, and Toru Hasegawa, Kawanishi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 66,823, Aug. 14, 1979, Pat. No. 4,245,047, which is a division of Ser. No. 815,050, Jul. 12, 1977, Pat. No. 4,187,292. This application Aug. 11, 1980, Ser. No. 176,755
Claims priority, application Japan, Mar. 31, 1977, 52-37168; Apr. 1, 1977, 52-37884
Int. Cl.³ C12N *1/20*
U.S. Cl. 435—253 **1 Claim**

1. A biologically pure culture of the microorganism belonging to the genus Nocardia having the identifying characteristics of ATCC 31280, said culture medium being capable of producing in a culture medium containing assimilable carbon and digestible nitrogen sources, a recoverable amount of Antibiotic C-14919 E-1 or E-2 or mixtures thereof having the following characteristics:

(a) Antibiotic C-14919 E-1
(i) m.p. 187° C. (decomp.)
(ii) Appearance: yellow crystals (needles or prisms)
(iii) Solubility:
Insoluble in: petroleum ether, hexane, water
Sparingly soluble in: diethyl ether, benzene
Soluble in: ethyl acetate, chloroform, butanol, methyl isobutyl ketone, ethanol, acetone, methanol
Readily soluble in: dimethylsulfoxide
(iv) Acid, neutral or basic: a neutral substance
(v) Elemental analysis:
C, 65.31; 65.05; 64.85 (%)
H, 7.71; 7.58; 7.62
N, 5.01; 4.95; 5.01
O, 21.37; 22.83; 22.45
(vi) Empirical formula: $C_{30\text{-}32}H_{42\text{-}48}N_2O_{8\text{-}9}$
(vii) Ultraviolet absorption spectrum:

$\lambda_{max}^{MeOH:\ N—HCl(9:1)(nm)}(E_{1cm}^{1\%})$: 274(455), 240(sh.), 397(43)

$\lambda_{max}^{MeOH(nm)}(E_{1cm}^{1\%})$: 274(455), 240(sh.), 397(43)

$\lambda_{max}^{MeOH:\ N—NaOH(9:1)(nm)}(E_{1cm}^{1\%})$: 236(585), 265(500), 550(56)

(viii) Infrared absorption spectrum (KBr):
Dominant peaks (cm^{-1}) at:
3430, 3340, 2950, 2910, 1740, 1692, 1660, 1645, 1605, 1500, 1375, 1315, 1120, 1100, 1085, 1060, 1025
(ix) Specific rotation: $[\alpha]_D^{25°}+350°\pm10°$ (c=0.5, methanol)
(x) color reactions
Negative ninhydrin, Ehrlich, peptide and 1% iron chloride-1% ferricyanide (1:1) reactions

(b) Antibiotic C-14919 E-2
(i) m.p. 148° C. (decomp.)
(ii) Appearance: Pale yellow crystals (needles or prisms)
(iii) Solubility:
Insoluble in: petroleum ether, hexane
Sparingly soluble in: diethyl ether, benzene, chloroform, water
Soluble in: ethyl acetate, butanol, methyl isobutyl ketone, ethanol, acetone, methanol
Readily soluble in: dimethylsulfoxide
(iv) Acid, neutral or basic: a neutral substance
(v) Elemental analysis:
C, 62.32; 62.07 (%)
H, 8.58; 8.43
N, 4.82; 4.78
O, 20.81: 20.81
(vi) Empirical formula: $C_{30\text{-}32}H_{44\text{-}50}N_2O_{8\text{-}9}\cdot xH_2O$
(vii) Ultraviolet absorption spectrum:

$\lambda_{max}^{MeOH:\ N—HCl(9:1)(nm)}(E_{1cm}^{1\%})$: 255(295), 308(sh.)

$\lambda_{max}^{MeOH(nm)}(E_{1cm}^{1\%})$: 255(2090, 308(sh.)

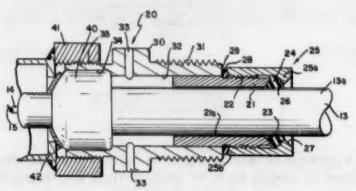
$\lambda_{max}^{MeOH:\ N—NaOH(nm)}(E_{1cm}^{1\%})$: 236(505), 265(420), 550(50)

(viii) Infrared absorption spectrum (KBr): Dominant peaks (cm^{-1}) at:
3480, 3250, 2980, 1685, 1625, 1598, 1472, 1390, 1370, 1315, 1207, 1090, 1065, 1042, 1030
(ix) Specific rotation: $[\alpha]_D^{25°}+62°+4°$ (c=0.5, methanol)
(x) Color reactions
Negative ninhydrin, Ehrlich and peptide reactions; Positive 1% iron chloride-1% ferricyanide (1:1) reaction (blue).

4,315,990
FERMENTATION SYSTEM AND PROBE DETECTOR HOLDER

Francis E. Sheets, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 11, 1980, Ser. No. 158,498
Int. Cl.³ C12M *1/34*
U.S. Cl. 435—291 **9 Claims**



1. A system for the preparation of biological agents, comprising

a tank for the fermentation of biological agents;
a threaded fitting in the tank wall;
a detector to monitor the fermentation process;
detector support means threadedly engaging the threaded fitting in the tank wall to support the operative portion of the detector within the tank and to provide access to the output of the detector outside of the vessel, said detector support means comprising
an inner member having an inner bore adapted to receive the detector, a concave, frustoconical, seal-engaging surface, and a threaded cylindrical outer surface at one end, and
a detector support housing having a first threaded outer surface portion to engage the threaded fitting in the tank wall, a housing inner bore at one end of the housing fas-

tened to the other end of the outer surface of the inner member, a grommet-seating surface at the outer end of the housing inner bore, and a second threaded outer surface surrounding the grommet-seating surface;

a grommet surrounding and supporting the detector and seated on the grommet-seating surface of the housing;

a grommet compression nut threaded onto the second threaded outer portion of the housing with a grommet washer between the grommet and grommet compression nut;

a first seal seated on the detector forwardly of the inner member within the tank;

a seal compression member threadedly engaging the threaded outer surface of the inner member and compressing the first seal between the seal compression member, the frustoconical, seal-engaging surface of the inner member and the outer surface of the detector;

a second seal seated on the inner member forwardly of the detector support housing and adjacent the interface between the inner member and the housing, said seal compression member and the threaded outer surface portion of the inner member being adapted so that the distal end of the seal compression member compresses the second seal between the distal end of the seal compression member and the detector support housing, said system thereby limiting exposure of fermentation materials to outwardly exposed surfaces of the system.

4,315,991

VERY LOW EXPANSION SEALING FRITS

Henry E. Hagy, and Francis W. Martin, both of Painted Post, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Dec. 19, 1980, Ser. No. 218,358
Int. Cl.³ C03C *1/00, 3/22*
U.S. Cl. 501—26 3 Claims

1. A thermally devitrifiable sealing glass suitable for sealing to glass, glass-ceramic, and ceramic articles having coefficients of thermal expansion ranging between about -5 to 5×10^{-7}/°C., said sealing glass consisting essentially, expressed in weight percent on the oxide basis, as calculated from the batch, of about 1–2% Li_2O, 9–13% ZnO, 0–1.5% MgO, 19–23% Al_2O_3, 61–68% SiO_2, and 1–8% $K_2O+Rb_2O+Cs_2O$ in the indicated proportions of 0–3% K_2O, 0–4% Rb_2O, and 0–7% Cs_2O, said glass being capable of forming sound seals when fired at about 900°–1000° C. and developing zinc beta-quartz crystals.

4,315,992

CARBON-CONTAINING AND UNCARBONIZED SINTER MAGNESIA REFRACTORIES

Hans-Jürgen Guls, Leoben, Austria, assignor to Veitscher Magnesitwerke-Actien-Gesellschaft, Vienna, Austria

Filed Aug. 7, 1980, Ser. No. 175,962
Claims priority, application Austria, Aug. 10, 1979, 5453/79
Int. Cl.³ C04B *35/04*
U.S. Cl. 501—101 5 Claims

1. A refractory, carbon-containing and uncarbonized brick or mass based on sinter magnesia, consisting essentially of an amount of a carbon-containing substance producing a residual content of 2 to 30% of carbon in an end product after carbonization, as determined by ASTM norm C 831-76, 1 to 20%, calculated as chromium metal, of metallic chromium or a metallic chromium compound, the metallic chromium or metallic chromium compound being primarily fine-grained and at least 80% thereof, based on the chromium metal content, having a grain size of less than 1 mm, and 60 to 97% of sinter magnesia, all percentages being by weight.

4,315,993

PREPARATION OF ETHYLENE GLYCOL

John F. Knifton, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 22, 1980, Ser. No. 219,073
Int. Cl.³ C07C *27/06*
U.S. Cl. 518—700 15 Claims

1. A process for the preparation of ethylene glycol which comprises reacting carbon monoxide and hydrogen in the presence of a ruthenium compound and one or more polyhydric phenols at a temperature of about 125° to about 300° C. and at a pressure of about 1000 psi to about 10,000 psi and wherein the said reaction is conducted in the presence of a solvent having the formula:

$$R(OCH_2CH_2)_nOR'$$

wherein R is alkyl having 1 to 4 inclusive carbon atoms and R' is selected from the group consisting of hydrogen and alkyl having 1 to 4 inclusive carbon atoms, and n is an integer of from 2 to 4 inclusive.

4,315,994

PREPARATION OF GLYCOLS AND ETHERS

John F. Knifton, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 29, 1980, Ser. No. 220,486
Int. Cl.³ C07C *27/06*
U.S. Cl. 518—701 12 Claims

1. A process of making alkylene glycols and their ethers which comprises the steps of contacting a mixture of CO and H_2 with a catalytically effective amount of a bimetallic catalyst system comprising a ruthenium(III) acetylacetonate and rhodium(III) acetylacetonate dispersed in a low melting quaternary phosphonium or ammonium base or salt at a pressure of 500 psi or greater and at a temperature of at least 180° C. for a sufficient time to provide said alkylene glycols and their ethers.

4,315,995

PREPARATION OF CATION-EXCHANGE RESIN

Charles M. Starks, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed Aug. 22, 1980, Ser. No. 180,200
Int. Cl.³ B01J *39/24*
U.S. Cl. 521—33 8 Claims

1. A process for preparing a cation-exchange resin wherein the process comprises:

(a) treating a chlorine-containing material, which is the distillation residue obtained by chlorinating or oxychlorinating a C_2–C_{40} hydrocarbon, with an effective amount of a sulfonating agent,

(b) treating the admixture of step (a) with an effective amount of water and an effective amount of organic solvent until the product is substantially free of sulfonating agents and is substantially free of materials which are soluble in common, organic solvents, and

(c) removing the volatile materials to obtain an insoluble, carbonaceous solid material containing 0.1 to 10 milliequivalents per gram of acid groups, said process being characterized further in that the distillation residue of step (a) is a liquid under column bottoms temperature.

4,315,996

METHOD FOR THE MANUFACTURE OF COMPOSITE FOAM MATERIALS

Günther Baatz, Buxheim; Klaus-Dieter Conrad, and Franz Riemhofer, both of Memmingen, all of Fed. Rep. of Germany, assignors to Metzeler Schaum GmbH, Memmingen, Fed. Rep. of Germany

Filed Dec. 4, 1980, Ser. No. 212,800

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1979, 2949392

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—54 **15 Claims**

1. Method for the manufacture of composite foam materials of foam material flakes, polyurethane binders and additional solid components which cause a modification or change of the properties of the composite foam material by mixing the foam material flakes with a polyurethane-forming binder and the additional solid components and cementing the foam material flakes together by subsequent hardening of the mixture obtained under pressure, the improvement comprising admixing said additional solid components in the form of an aqueous dispersion or an aqueous solution.

4,315,997

STYRENE RESIN-BLOCK COPOLYMER COMPOSITION

Norihisa Ujikawa, Aichi; Masaharu Nakayama, Nagoya, and Masaru Matsushima, Aichi, all of Japan, assignors to Nippon Oil and Fats Co., Ltd., Tokyo, Japan

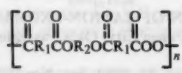
Filed Jul. 2, 1980, Ser. No. 165,471

Claims priority, application Japan, Jul. 6, 1979, 54-85549

Int. Cl.³ C08L *53/00, 25/14*

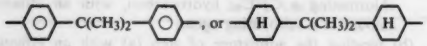
U.S. Cl. 525—94 **5 Claims**

1. A styrene resin composition which consists of 0.01–40 wt % of a styrene-vinyl acetate block copolymer and 99.99–60 wt % of a styrene polymer, said styrene-vinyl acetate block copolymer consisting of 90–10 wt % of the constitution unit based on the styrene and 10–90 wt % of the constitution unit based on the vinyl acetate and is prepared by copolymerizing a vinyl acetate polymer having peroxy bonds in the molecule thereof with styrene monomers, said vinyl acetate polymer having peroxy bonds in the molecule thereof being prepared by polymerizing vinyl acetate monomers with a polymer having peroxy bonds in the molecule which is selected from the group consisting of diacyl type polymeric peroxides having the following formula (1), diacyl type polymeric peroxides having the following formula (2) and ester type polymeric peroxides having the following formula (3)

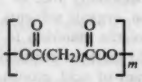


(1)

wherein R_1 is an alkylene group having 1–15 carbon atoms or a phenylene group and R_2 is an alkylene group having 2 to 10 carbon atoms, $-(CHR_3CH_2O)_k-CHR_3-CH_2-$ (R_3 is a hydrogen atom or a methyl group, K is 1–9),

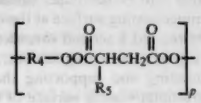


and n is 2–20



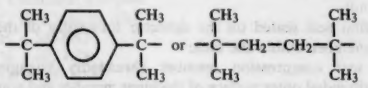
(2)

wherein l is 1–15, and m is 2–20



(3)

wherein R_4 is



R_5 is a hydrogen atom, CH_3 group or Cl atom and p is 2–20.

4,315,998

POLYMER-BOUND PHOTOSENSITIZING CATALYSTS

Douglas C. Neckers, Bowling Green, Ohio; Erich C. Blossey, Winter Park, Fla., and A. Paul Schaap, Detroit, Mich., assignors to Research Corporation, New York, N.Y.

Continuation of Ser. No. 699,746, Jun. 24, 1976, abandoned, which is a continuation-in-part of Ser. No. 478,694, Jun. 12, 1974, abandoned. This application Feb. 5, 1979, Ser. No. 9,713

Int. Cl.³ C08F *8/00*; C08G *69/48*

U.S. Cl. 525—332 **8 Claims**

1. A method of preparing a polymer-bound photosensitizing catalyst for use in heterogeneous catalysis of photosensitized chemical reactions, which comprises forming a mixture in an organic solvent of a polymeric material having attached thereto an available leaving group which is capable of being displaced in a nucleophilic displacement reaction with a nucleophilic reagent and a photosensitizing catalytic compound containing in its molecule a nucleophile which is capable of displacing the chloride atom of a chloromethatylated styrene polymer in a nucleophilic displacement reaction and which nucleophile is a photosensitizer dye selected from the group consisting of rose bengal, acridine orange, chlorophyllin, crystal violet, eosin Y, fluoroscein, flavin mononucleotide, hematoporphyrin, hemin, malachite green, methylene blue, rhodamine B, chlorophyll, cosine, erythrosin, methylene green, toluidine blue and thionine, refluxing said mixture for a time sufficient to effect a nucleophilic displacement reaction between said chloromethylated styrene polymer and said photosensitizing dye, and recovering from said mixture the resulting polymer-bound photosensitizing catalyst beads.

4,315,999

PROCESS FOR PREPARING POLYOLEFINS

Kazuo Matsuura; Takeichi Shiraishi; Etsuo Kawamata, all of Kawasaki; Nobuyuki Kuroda, Yokohama, and Mituji Miyoshi, Kanagawa, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Filed Sep. 23, 1980, Ser. No. 189,823

Claims priority, application Japan, Sep. 26, 1979, 54-122599; Dec. 6, 1979, 54-157428

Int. Cl.³ C08F *4/02, 10/00*

U.S. Cl. 526—114 **16 Claims**

1. A process for polymerizing at least one olefin using a catalyst, said catalyst comprising a solid component and an organometallic compound, characterized in that said solid component is a solid product obtained by contacting together the following components (i)-(iii):

(i) at least one compound selected from the group consisting of a silicon oxide and aluminum oxide,

(ii) a compound represented by the general formula ROH wherein R is a hydrocarbon radical having 1 to 20 carbon atoms, and

(iii) a substance obtained by supporting at least one compound selected from the group consisting of a titanium compound and a vanadium compound on a solid com-

pound containing at least one compound selected from the group consisting of a magnesium halide and a manganese halide; there being in said solid component 0.01 to 5 g of compound (ii) per gram of compound (i), 0.1 to 100 g of substance (iii) per gram of compound (ii) and 0.001–500 g of substance (iii) per gram of compound (i).

2. A process for polymerizing at least one olefin using a catalyst, said catalyst comprising a solid component and an organometallic compound, characterized in that said component is a solid product obtained by contacting together the following components (i)-(iv):

(i) at least one compound selected from the group consisting of a silicon oxide and an aluminum oxide,

(ii) a compound represented by the general formula ROH wherein R is a hydrocarbon radical having 1 to 20 carbon atoms,

(iii) a substance obtained by supporting at least one compound selected from the group consisting of a titanium compound and a vanadium compound on a solid compound containing at least one compound selected from the group consisting of a magnesium halide and a manganese halide, and

(iv) a compound represented by the general formula R'—O—R'' wherein R' and R'', which may be alike or different, are each a hydrocarbon radical having 1 to 20 carbon atoms;

there being in said solid component 0.01 to 5 g of compound (ii) per gram of compound (i), 0.1 to 100 g of substance (iii) per gram of compound (ii), 0.1 to 100 g of compound (iv) per gram of substance (iii), and 0.001 to 500 g of substance (iii) per gram of compound (i).

4,316,000
TWO-PART, ANAEROBICALLY-CURING COMPOSITIONS

Charles W. Boeder, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 3, 1980, Ser. No. 203,685
Int. Cl.³ C08F *20/10, 20/20*
U.S. Cl. 526—301 **10 Claims**

1. An anaerobically-curing composition comprising a first part and a second part, with at least one of said first part and said second part comprising as a major constituent a polymerizable monomer having at least one α,β-unsaturated carboxyl functionality per molecule of monomer, and with said first part comprising as a first initiator component a perfluoroalkyl sulfonanilide and said second part comprising as a second initiator component a secondary or tertiary aromatic amine.

4,316,001
ANIONIC POLYMERIZATION OF HETEROCYCLIC MONOMERS WITH ALKALI METAL AMIDE HYDROXYLATED COMPOUND INITIATOR

Sylvie L. Boileau, Paris; Serge L. Lecolier, Janville sur Juine, and Serge F. Raynal, Villejuif, all of France, assignors to Societe Nationale des Poudres et Explosifs, Cedex, France

Division of Ser. No. 800,036, May 24, 1977, Pat. No. 4,254,247.
This application Jul. 27, 1979, Ser. No. 61,288
Int. Cl.³ C08G *77/08, 69/20, 63/10, 59/68*
U.S. Cl. 528—14 **11 Claims**

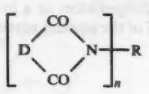
1. A process of polymerization of an heterocyclic monomer which is capable of undergoing anionic polymerization by opening of the heterocyclic ring in the presence of an initiator and a solvent, which comprises polymerizing said heterocyclic monomer in the presence of an initiator which comprises an association product prepared from at least two moles of an alkali metal amide which is lithium amide, sodium amide or potassium amide and one mole of at least one compound which is an hydroxylated compound, in an aprotic solvent.

4,316,002
MOLDING COMPOSITIONS COMPRISED OF POLYIMIDE/N-VINYLPYRROLIDONE PREPOLYMER AND EPOXY RESIN

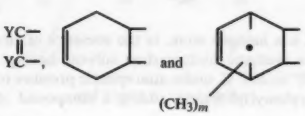
Robert Cassat, Ternay, and Gerard Guillot, Tassin La Demi-Lune, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Oct. 23, 1979, Ser. No. 87,650
Claims priority, application France, Oct. 25, 1978, 78 30276
Int. Cl.³ C08G *59/08, 59/06, 73/12*
U.S. Cl. 528—107 **12 Claims**

1. A composition of matter comprising (i) a prepolymer consisting essentially of a reaction product obtained by reacting (a) a polyimide having the structural formula:



wherein D is selected from the group consisting of



wherein Y is selected from the group consisting of H, CH_3, and Cl, m is 0, 1 or 2, R is an organic radical of valency n, containing from 2 to 50 carbon atoms, and n is a number having an average value between 2 and 5, and (b) N-vinyl-2-pyrrolidone; and (ii) an epoxy resin having at least one 1,2 epoxy group.

4,316,003
EPOXY RESIN CURING AGENTS

Mark F. Dante, and Rey A. Allen, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 23, 1980, Ser. No. 199,801
Int. Cl.³ C08G *59/50*
U.S. Cl. 528—111 **14 Claims**

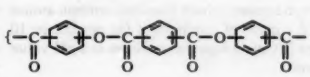
1. An adduct suitable for curing epoxy resins prepared by (A) reacting (1) an epoxy compound containing more than one vicinal epoxy group per molecule with (2) a primary monoamine in the chemical equivalent ratio of epoxy groups to amine groups from about 2:1 to about 5:4, and then (B) reacting the resulting condensate with a polyfunctional amine in the chemical equivalent ratio of epoxy to amine groups from about 1:1.25 to about 1:3.0.

4,316,004
PROCESS FOR PRODUCING OXYBENZOYL COPOLYESTERS

Shozaburo Imai, Akashi, and Hiroaki Sugimoto, Yao, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 25, 1980, Ser. No. 143,531
Claims priority, application Japan, May 11, 1979, 54/58491
Int. Cl.³ C08G *63/02*
U.S. Cl. 528—126 **5 Claims**

1. A process for producing oxybenzoyl copolyesters comprising 3 to 300 of at least a portion of a repeating unit of the formula,


(I)

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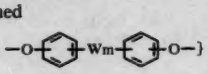
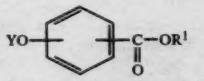


wherein m and n are each 0 or 1, and W is —O—, —SO_2—, —S—, or —CO—, which comprises reacting at least a portion of the amount present of a compound of the formula (II),

(II)

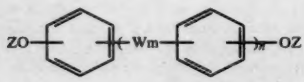


wherein R^1 is a hydrogen atom, a benxyl, lower alkyl or phenyl group, and Y is a hydrogen atom or a lower alkanoyl group, with at least a portion of the amount present of a compound of the formula (III),

(III)

wherein X is a halogen atom, in the presence of an aliphatic, alicyclic or aromatic hydrocarbon solvent having a boiling point of 100° to 260° C. under atmospheric pressure to produce bis(carboxyphenyl)phthalate, adding a compound of the formula (V),

(V)



wherein W is —O—, —SO_2—, —S— or —CO—, Z is a hydrogen atom or an alkanoyl group, and m and n are each 0 or 1, and optionally a compound of the formula (IV),

(IV)

wherein R^2 and R^3 are each a hydrogen atom, a benzyl, lower alkyl or phenyl group, and carrying out polycondensation with the removal of the solvent and by-products so that the polymerization system is made substantially free from the solvent at least at the end of the polycondensation to carry out substantial bulk polycondensation.

4,316,005

CATIONIC ADSORPTION AGENT

Rudolf F. Wurster, Pfeffingen, and Jürg Merz, Therwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 23, 1980, Ser. No. 162,275

Claims priority, application Switzerland, Jun. 28, 1979, 6036/79; Feb. 4, 1980, 869/80

Int. Cl.³ C08G *12/32*

U.S. Cl. 528—256 **12 Claims**

1. A cationic adsorption agent obtained by reaction of

(a) an amino compound which contains at least one amino group and at least one free or methylolated carboxamide group, with

(b) an aminoplast precondensate which does not contain amino group, in a ratio of 1 mole of component (a) per 0.2 to 10 moles of component (b), in an aqueous medium at a pH value between about 2 and 7.

4,316,006

POLYMERIC PHOSPHONATES OF A CYCLIC PHOSPHITE AND EPOXIDE

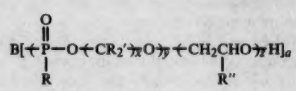
Gerald K. McEwen, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 27, 1980, Ser. No. 125,020

Int. Cl.³ C08G *79/04*

U.S. Cl. 528—398 **20 Claims**

1. A polymeric phosphonate of the formula:



wherein x is an integer from 2 to 4; y and z are individually at least 1; R is individually hydrocarbyl or inertly substituted hydrocarbyl; each R' is individually hydrogen, hydrocarbyl or inertly substituted hydrocarbyl; each R" is hydrogen, hydrocarbyl, inertly substituted hydrocarbyl or a hydroxy containing group; B is the residue of an organic, active hydrogen initiator provided that if the active hydrogen initiator is an alkyl alcohol, it is a monohydric alcohol or an alkyl alcohol having three or more hydroxy groups; and a is an integer from 1 to the number of active hydrogens on the organic active hydrogen initiator.

4,316,007

THIAZINE QUATERNARY AMMONIUM SALTS OF POLYEPIHALOHYDRIN

Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Apr. 23, 1979, Ser. No. 32,036

Int. Cl.³ C08G *59/50*

U.S. Cl. 528—405 **5 Claims**

1. A thiazine quaternary ammonium salt of polyepihalohydrin wherein the nitrogen atom of the thiazine moiety is attached to the polymeric chain through a —CH_2— group.

4,316,008

METHOD FOR REMOVING CATALYST RESIDUES FROM ATACTIC POLYPROPYLENE

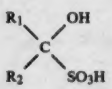
Carl L. Willis, and Lynn H. Slaugh, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 24, 1980, Ser. No. 209,627

Int. Cl.³ C08F *6/08*

U.S. Cl. 528—487 **6 Claims**

1. A process for removing catalyst residues of Group I–III and Group IV–VIII of the Periodic Table from atactic polypropylene which comprises (a) slurrying or dissolving atactic polypropylene in an alkane having a carbon number from about 4 to about 12 to produce an organic phase, (b) contacting said organic phase with an aqueous phase containing an alpha-hydroxy sulfonic acid having the following general formula:



wherein R_1 and R_2 are individually hydrogen or hydrocarbyl of up to about 7 carbon atoms and (c) subsequently separating the polypropylene-containing organic phase from the aqueous phase thereby producing an organic phase having substantially removed therefrom said catalyst residues.

4,316,009

PROCESS FOR THE PURIFICATION OF POLYCARBONATE SOLUTIONS

Roberto Rinaldi, Mantova; Gabriele Govoni, Renazzo, and Francesco Visani, Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Feb. 1, 1980, Ser. No. 117,787
Claims priority, application Italy, Feb. 5, 1979, 19884 A/79
Int. Cl.[3] C08J *3/16*
U.S. Cl. 528—502 5 Claims

1. A continuous process for the separation of the two phases of aqueous emulsions obtained by emulsifying organic solvent solutions of polycarbonates containing impurities with an aqueous phase at a selected pH comprised between 2 and 14 for removing said impurities, which process comprises sending the emulsions, at a spatial velocity of 0.01 to 2 cm/sec., through a layer of fibers 10 to 500 mm. thick and having an apparent density of 0.2 to 0.7 g/cc, and then continuously and separately removing, at a point beyond the layer of fibers, the two phases which separate in the form of two layers as the emulsion passes through the layer of fibers.

4,316,010

CIS-$C_3''C_4''$-CARBONATE DERIVATIVES OF O-DEMETHYLOLEANDOMYCIN AND INTERMEDIATES THEREFOR

Arthur A. Nagel, Gales Ferry, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Jan. 2, 1981, Ser. No. 222,187
Int. Cl.[3] C07H *17/08*
U.S. Cl. 536—9 13 Claims

1. A compound selected from the group consisting of 3''-epioleandomycin-Y 3'',4''-carbonate, 4''-epioleandomycin-Y 3'',4''-carbonate and the pharmaceutically acceptable salts thereof.

4,316,011

RHODOMYCIN ANTIBIOTICS

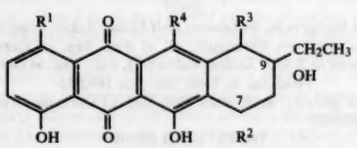
Toshikazu Oki, Yokohama; Akihiro Yoshimoto; Yasue Matsuzawa, both of Fujisawa; Taiji Inui, Chigasaki; Tomio Takeuchi, and Hamao Umezawa, both of Tokyo, all of Japan, assignors to Sanraku-Ocean Co., Ltd., Tokyo, Japan

Filed Jun. 30, 1980, Ser. No. 164,756
Claims priority, application Japan, Jul. 13, 1979, 54-89552
Int. Cl.[3] C07H *15/24;* A61K *31/71*
U.S. Cl. 536—17 A 1 Claim

1. New derivatives of rhodomycin-group of antibiotics selected from the group consisting of ϵ-rhodomycin RDC, ϵ-isorhodomycin RDC, β-rhodomycin RDC and γ-rhodomycin RDC

wherein

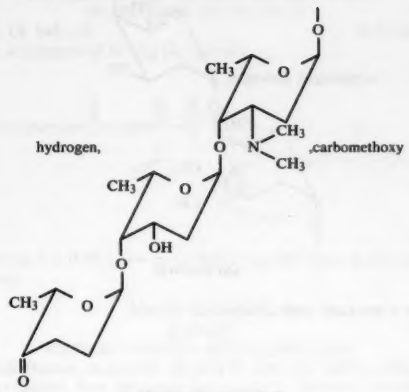
R is rhodosamine, D is 2-deoxyfucose and C is cinerulose, respectively having the general formula I:

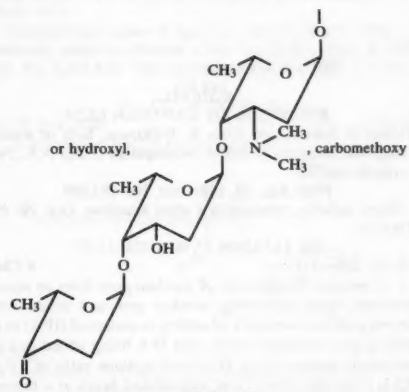


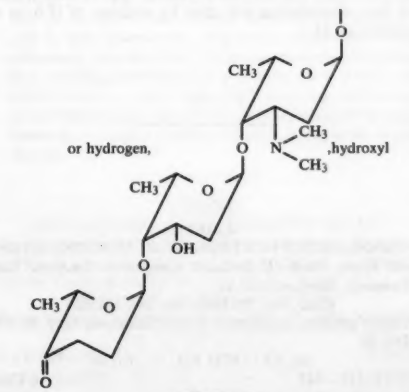
(I)

wherein

a substitution of R^1, R^2, R^3 and R^4 represents







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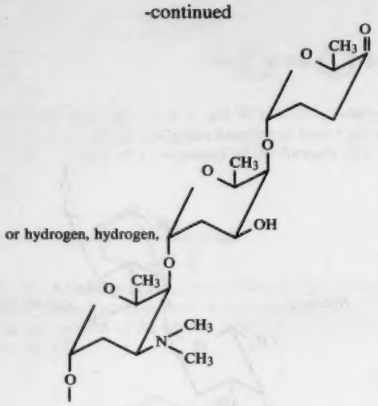


or a non-toxic acid addition salt thereof.

4,316,012

RECOVERY OF XANTHAN GUM

Michael B. Inkson, and Clive K. Wilkinson, both of Reading, England, assignors to Talres Development (N.A.) N.V., Netherlands Antilles

Filed Aug. 29, 1980, Ser. No. 182,504

Claims priority, application United Kingdom, Oct. 29, 1979, 37364/79

Int. Cl.³ C08B *37/00*; C12D *13/00*

U.S. Cl. 536—114 **9 Claims**

1. A process for recovery of xanthan gum from an aqueous fermented broth containing xanthan gum and solids, which process consists essentially of adding isopropanol (IPA) to said broth to give a diluted broth, said IPA being added in a sub-precipitant amount of an IPA:broth volume ratio of 0.6:1 to 0.95:1; removing solids from said diluted broth at a temperature of at least 100° C. and thereby giving a resultant liquid; and then precipitating said gum by addition of IPA to said resultant liquid.

4,316,013

SUBSTITUTED HETEROCYCLIC METHINE DYES

Keith Hunt, Maghull, England, assignor to Eastman Kodak Company, Rochester, N.Y.

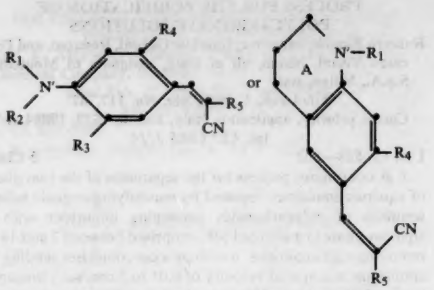
Filed Aug. 29, 1980, Ser. No. 182,520

Claims priority, application United Kingdom, May 16, 1980, 16214/80

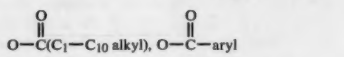
Int. Cl.³ C07D *403/10, 263/54*

U.S. Cl. 542—445 **6 Claims**

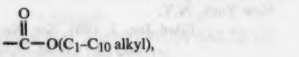
1. A compound of the formula



in which R_1 and R_2 are the same or different and selected from hydrogen, aryl, benzyl, cyclohexyl, C_1–C_6 alkyl, C_1–C_6 alkyl substituted with Cl, CN, $OC_2H_4OC_2H_5$, C_1–C_4 alkoxy, aryl,



in which the aryl, and the C_1–C_{10} alkyl of the preceding substituent are unsubstituted or substituted with Cl, Br, CN, NO_2, CO—alkyl, CO—aryl, alkoxy, aryloxy, CO—O—alkyl or CO—O—aryl,



NHCONHPh, OCONHPh, phthalimido, succinimido and mercaptobenzothiazolyl;

is selected from piperidino, morpholino, thiomorpholino, and piperazino; R_3 is H, Cl, Br, C_1–C_4 alkyl or C_1–C_4 alkoxy; ring A is unsubstituted or substituted with 1–3 methyl groups; R_4 is H, Cl, Br, C_1–C_4 alkyl or C_1–C_4 alkoxy; and R_5 is selected from 3-benzisothiazolyl, 2-benzothiazolyl, 2-benzoxazolyl, 2-quinoxalyl, 2-quinazolinonyl, 2-1,3,4-oxadiazolyl, 2-1,3,4-thiadiazolyl, and these heterocycles substituted with Cl, Br, NO_2, CN, aryl, aryl substituted with Cl, Br, NO_2, or CN, C_1–C_4 alkyl, or $COOR_6$ wherein R_6 is C_1–C_4 alkyl or aryl.

4,316,014

5,6-DIHYDRO-1,2,4,6-THIATRIAZIN-5-ONE-1,1-DIOXIDES

Gerhard Hamprecht, Weinheim; Rolf-Dieter Acker, Leimen, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

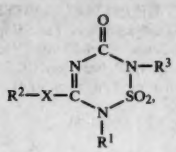
Filed Jul. 8, 1980, Ser. No. 166,856

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1979, 2933889

Int. Cl.³ C07D *285/00*

U.S. Cl. 544—7 **2 Claims**

1. A 5,6-dihydro-1,2,4,6-thiatriazin-5-one-1,1-dioxide of the formula



I

where

R^1 is hydrogen, a metal atom or an unsubstituted or substituted ammonium radical,

R^2 is saturated or unsaturated straight-chain aliphatic radical of up to 10 carbon atoms, a cycloaliphatic radical of 3 to 7 carbon atoms, a branched saturated or unsaturated aliphatic radical of 3 to 10 carbon atoms, a halogen-, alkoxy- or alkylmercapto-substituted aliphatic radical of 2 to 10 carbon atoms, tetrahydrofuryl substituted methyl, a cycloalkoxy-substituted aliphatic radical of 4 to 10 carbon atoms, unsubstituted or halogen-substituted benzyl or phenyl, halophenyl or alkylphenyl of a total of up to 10 carbon atoms,

R^3 is hydrogen, a straight-chain aliphatic radical of up to 10 carbon atoms, a cycloaliphatic radical of 3 to 7 carbon atoms, a branched aliphatic radical of 3 to 10 carbon atoms, haloalkyl, or alkoxyalkyl of 2 to 10 carbon atoms and

X is oxygen and may also be sulfur if R^2 is unsubstituted or halogen-substituted benzyl.

4,316,015

6H-1,2,4,6-THIATRIAZINE-1,1-DIOXIDES

Gerhard Hamprecht, Weinheim; Rolf-Dieter Acker, Leimen, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

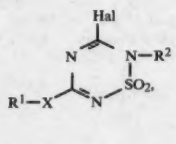
Filed Oct. 23, 1980, Ser. No. 199,820

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1979, 2943703

Int. Cl.³ C07D *285/00*

U.S. Cl. 544—7 **2 Claims**

1. A 6H-1,2,4,6-thiatriazine-1,1-dioxide of the formula



where

R^1 is an alkyl, alkenyl or alkynyl radical of up to 10 carbon atoms, a cycloalkyl radical of 3 to 7 carbon atoms, a branched, saturated or unsaturated alkyl, alkenyl or alkynyl radical of 3 to 10 carbon atoms, a halogen-, alkoxy- or alkylmercapto-substituted straight-chain or branched alkyl, alkenyl or alkynyl radical of 2 to 10 carbon atoms, a cycloalkoxy-substituted alkyl, alkenyl or alkynyl radical of 4 to 10 carbon atoms, unsubstituted or halogen-, lower alkyl- or lower alkoxy-substituted phenyl, or unsubstituted or halogen-substituted benzyl, R^2 is hydrogen, an alkyl radical of 1 to 10 carbon atoms, a cycloalkyl radical of 3 to 7 carbon atoms, a branched alkyl radical of 3 to 10 carbon atoms or halogen- or alkoxy-substituted alkyl of 2 to 10 carbon atoms, X is oxygen, sulfur, sulfinyl or sulfonyl and Hal is halogen.

4,316,016

CEPHALOSPORIN INTERMEDIATES

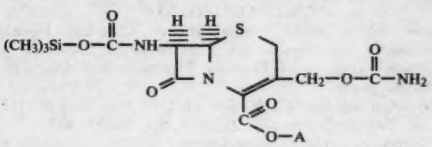
Derek Walker, Jamesville; Herbert H. Silvestri, DeWitt; Chester Sapino, East Syracuse, and David A. Johnson, Fayetteville, all of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Division of Ser. No. 110,277, Jan. 7, 1980, abandoned, which is a division of Ser. No. 21,511, Mar. 19, 1979, Pat. No. 4,223,135. This application Jun. 11, 1980, Ser. No. 158,554

Int. Cl.³ C07D *501/04, 501/16*

U.S. Cl. 544—16 **8 Claims**

1. A compound having the formula



wherein A is $(CH_3)_3Si$— or an easily cleavable ester protecting group.

4,316,017

CEPHALOSPORIN INTERMEDIATES

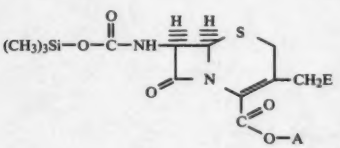
Derek Walker, Jamesville; Herbert H. Silvestri, DeWitt; Chester Sapino, East Syracuse, and David A. Johnson, Fayetteville, all of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 110,277, Jan. 7, 1980, abandoned, which is a division of Ser. No. 21,511, Mar. 19, 1979, Pat. No. 4,223,135. This application Jun. 11, 1980, Ser. No. 158,546

Int. Cl.³ C07D *501/36*

U.S. Cl. 544—026 **3 Claims**

1. A compound having the formula



wherein

A is an easily cleavable ester protecting group; and

E is —S—Z wherein Z represents a 5-membered aromatic heterocyclic ring containing three or four atoms of N and zero or one atom selected from the group consisting of O and S, said heterocyclic ring being substituted by one substituent selected from the group consisting of methyl and $-(CH_2)_nCOOSi(CH_3)_3$ in which n is 1, 2 or 3, said sulfur atom in —S—Z being connected to a carbon atom of said heterocyclic ring Z and said 5-membered aromatic heterocycle being a triazole, tetrazole, oxadiazole or thiadiazole.

4,316,018

CRYSTALLIZED CEPHALOSPORIN SALTS

Yoshinobu Yoshimura, Suita; Nobuhide Morikawa, Toyonaka, and Kunio Takanohashi, Kawanishi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed May 6, 1980, Ser. No. 147,053

Claims priority, application Japan, May 14, 1979, 54-59481

Int. Cl.³ C07D *501/36*

U.S. Cl. 544—27 **5 Claims**

1. A crystalline dihydrate or anhydride of pivaloyloxymethyl 7β-[2-(2-aminothiazol-4-yl)acetamidol]-3-[[[1-(2-

dimethylaminoethyl)-1H-tetrazol-5-yl]thio]methyl]ceph-3-em-4-carboxylate dihydrochloride.

4,316,019

PREPARATION OF SYN-ISOMER OF 3-ALKANOYLOXYMETHYL-7-(2-ALKOXYIMINO-2-THIAZOLYLACETAMIDO-3-CEPHEM-4-CARBOXYLIC ACID COMPOUNDS

Takao Takaya, Sakai; Takashi Masugi, Kitamachi; Hisashi Takasugi, Kohamanishi, and Hiromu Kochi, Sakai, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

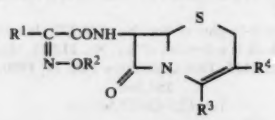
Division of Ser. No. 767,700, Feb. 11, 1977, Pat. No. 4,166,115. This application Jun. 19, 1978, Ser. No. 916,952

Claims priority, application United Kingdom, Apr. 12, 1976, 14916/76; Jun. 7, 1976, 23490/76; Japan, Oct. 19, 1976, 51-125826

Int. Cl.³ C07D *501/06*

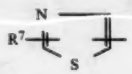
U.S. Cl. 544—28 3 Claims

1. A process for preparing syn-isomer of 3-lower alkanoyloxymethyl-7-(2-lower alkoxyimino-2-thiazolylacetamido)-3-cephem-4-carboxylic acid compounds of the formula:



and pharmaceutically acceptable salts thereof, wherein

R^1 is



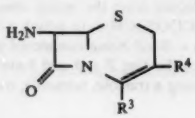
R^2 is lower alkyl;

R^3 is carboxy;

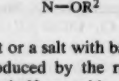
R^4 is lower alkanoyloxymethyl; and

R^7 is amino, lower alkanoylamino or halo(lower)alkanoylamino,

which comprises the step of reacting a compound of the formula:



or its trimethylsilylated compound at the amino group or an acid addition salt or a salt with base, with a 2-lower alkoxyimino-2-thiazolylacetic acid of the formula:



or an acid addition salt or a salt with base in the presence of a Vilsmeier reagent produced by the reaction of phosphorus oxychloride with dimethylformamide.

4,316,020

PREPARATION OF ISATOIC ANHYDRIDES

Gernot Reissenweber, Ludwigshafen, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

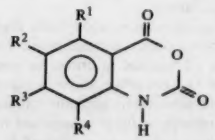
Filed Jun. 2, 1980, Ser. No. 155,761

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1979, 2925175

Int. Cl.³ C07D *265/26*

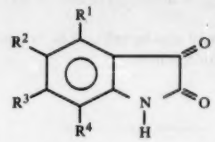
U.S. Cl. 544—105 2 Claims

1. A process for the preparation of isatoic anhydrides of the formula I



I

where R^1, R^2, R^3 and R^4 are identical or different and each is hydrogen, alkyl, alkoxy, halogen, nitro, haloalkyl or haloalkoxy, said alkyl, alkoxy, haloalkyl and haloalkoxy radicals containing from 1 to 4 carbon atoms, wherein an isatin of the formula II



II

where R^1, R^2, R^3 and R^4 have the above meanings, is reacted with hydrogen peroxide in an acid medium.

4,316,021

SUBSTITUTED 1-SULFONYLBENZIMIDAZOLES

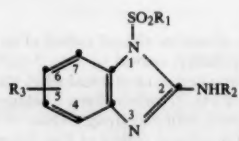
Charles J. Paget, Indianapolis, and James H. Wikel, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 66,353, Aug. 13, 1979, Pat. No. 4,243,813, which is a division of Ser. No. 887,391, Mar. 16, 1978, Pat. No. 4,196,125, which is a division of Ser. No. 760,803, Jan. 19, 1977, Pat. No. 4,118,573, which is a division of Ser. No. 634,942, Nov. 24, 1975, Pat. No. 4,018,790, which is a continuation-in-part of Ser. No. 574,202, May 8, 1975, abandoned, which is a continuation-in-part of Ser. No. 484,841, Jul. 1, 1974, abandoned. This application Sep. 2, 1980, Ser. No. 183,659

Int. Cl.³ C07D *235/30, 413/12*

U.S. Cl. 544—139 7 Claims

1. A compound of the formula



wherein

R_1 is C_1–C_5 alkyl, C_3–C_7 cycloalkyl, phenyl, furyl, thienyl, thiazol-2-yl, 2-acetamido-4-methylthiazol-5-yl, 1,3,4-thiadiazol-2-yl, 2-methyl-1,3,4-thiadiazol-5-yl, 2-methylamino-1,3,4-thiadiazol-5-yl or R_4R_5N—, wherein R_4 and R_5 are independently C_1–C_3 alkyl and when taken together with the nitrogen atom to which they are attached, are pyrrolidino, piperidino or morpholino;

R_2 is hydrogen, formyl, acetyl or propionyl;

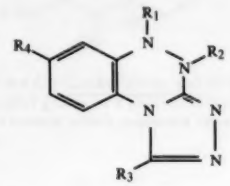
R_3 C_1–C_8 alkoxycarbonylmethyl, 1-(C_1–C_8 alkoxycarbonyl-)ethyl, hydroxymethyl, methylsulfonyl or trifluoromethyl; and R_3 is at the 5 or 6 position, provided that R_3 is other than hydroxymethyl when R_1 is R_4R_5N—.

4,316,022
BENZO-AS-TRIAZINE DERIVATIVES

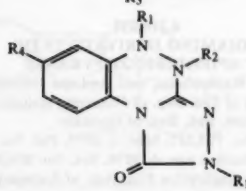
György Hajos; Andras Messmer; Pal Benko; Lujza Petocz; Peter Görog, and Ibolya Kasoczky, all of Budapest, Hungary, assignors to EGYT Gyogyszervegyeszeti Gyar, Budapest, Hungary

Filed Mar. 28, 1980, Ser. No. 135,143
Claims priority, application Hungary, Apr. 11, 1979, EE 2646
Int. Cl.³ C07D *487/04, 487/14, 401/14, 403/14*
U.S. Cl. 544—184 **3 Claims**

1. A benzo-as-triazine derivative of the formula (I) or (Ia) or a pharmaceutically acceptable acid addition salt thereof,



(I)



(Ia)

wherein

R_1 and R_2 each represent hydrogen, a C_{1-20} alkylcarbonyl group, a phenylcarbonyl or phenyl-(C_{1-4} alkyl)-carbonyl group having optionally one or more halogen, hydroxy or C_{1-3} alkoxy substituents which may be the same or different, furthermore a pyridylcarbonyl, a pyrazinylcarbonyl, a furylcarbonyl, a chloroacetyl or a C_{1-4} alkoxycarbonyl group, or

R_1 and R_2 may form, together with the adjacent nitrogen atoms, a pyrazole ring having optionally a C_{1-6} alkyl substituent in position 4,

with the proviso that one of R_1 and R_2 is always different from hydrogen,

R_3 stands for hydrogen, mercapto group, a C_{1-4} alkylmercapto group, amino group, a C_{1-4} alkylamino group, a piperazino group having optionally an N-alkyl or 2-pyridyl substituent, a morpholino group or a piperidino group, and

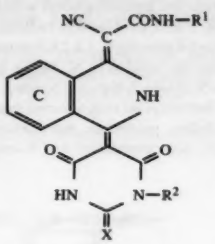
R_4 stands for hydrogen, halogen, C_{1-4} alkyl or C_{1-4} alkoxy group.

4,316,023
ISOINDOLINE COLORANTS

Georg Henning, Ludwigshafen, and Wolfgang Lotsch, Beindersheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 4, 1980, Ser. No. 137,272
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1979, 2914086
Int. Cl.³ C09B *57/04*
U.S. Cl. 544—300 **5 Claims**

1. An isoindoline colorant insoluble in water and organic solvents of the formula



where

R^1 is C_1–C_4-alkyl,

R^2 is hydrogen or C_1–C_4-alkyl and

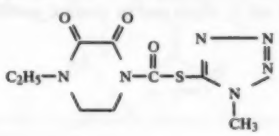
X is oxygen, sulfur, imino or N-cyanoimino.

4,316,024
DIOXO PIPERAZINE COMPOUNDS

Seiji Iimura, Tokyo; Jun Okumura, Yokohama, and Takayuki Naito, Kawasaki, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

Filed Sep. 15, 1980, Ser. No. 187,273
Int. Cl.³ C07D *241/04*
U.S. Cl. 544—359 **2 Claims**

1. The compound having the structure



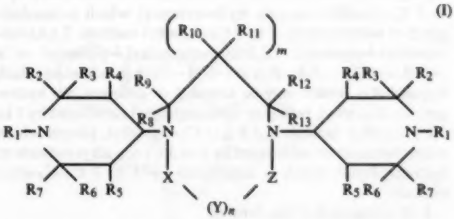
4,316,025
PIPERIDINE COMPOUNDS

Giuseppe Cantatore, Casalecchio di Reno, and Paolo Cassandrini, Bologna, both of Italy, assignors to Chimosa Chimica Organica S.p.A., Bologna, Italy

Filed Apr. 10, 1980, Ser. No. 139,274
Claims priority, application Italy, Apr. 13, 1979, 21841 A/79
Int. Cl.³ C07D *401/14*
U.S. Cl. 544—364 **6 Claims**

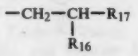
1. A compound of the formula

(I)

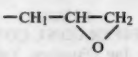


in which R_1 is hydrogen, —O•, —CN, a linear or branched alkyl radical containing from 1 to 20 carbon atoms, an alkenyl or alkynyl radical containing from 2 to 20 carbon atoms, benzyl which is unsubstituted or substituted by 1 to 3 C_1–C_4-alkyl radicals or hydroxybenzyl which is unsubstituted or substituted by 1 to 3 C_1–C_4-alkyl radicals; or R_1 is a —COR_{14}, —$COOR_{14}$, —CH_2COOR_{14} or —$CONR_{14}R_{15}$ radical, in which R_{14} and R_{15}, which may be identical or different, are linear or branched C_1–C_{20}-alkyl, C_2–C_{20}-alkenyl, C_5–C_{12}-

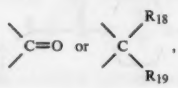
cycloalkyl, phenyl which is unsubstituted or substituted by 1 to 3 C_1–C_8-alkyl radicals, hydroxyphenyl which is unsubstituted or substituted by 1 to 3 C_1–C_4-alkyl radicals, C_7–C_{12}-aralkyl, 2,2,6,6-tetramethyl-4-piperidyl, 1,2,2,6,6-pentamethyl-4-piperidyl or, when they are bonded to N, can be hydrogen or, conjointly with the N to which they are bonded, can form a nitrogen-containing heterocyclic ring selected from the group consisting of pyrrolidine, piperidine, morpholine, piperazine, N-methylpiperazine, homopiperazine and N-methylhomopiperazine; or R_1 is a



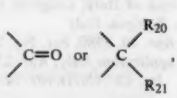
radical, in which R_{16} is hydrogen or methyl and R_{17} is —OH, —OR_{14}, —$OCOR_{14}$ or —$OCONR_{14}R_{15}$, in which R_{14} and R_{15} are as defined above; or R_1 is a



radical; R_2, R_2, R_6 and R_7, which may be identical or different, are an alkyl radical containing 1 to 6 carbon atoms; R_4 and R_5, which may be identical or different, are hydrogen or an alkyl radical containing from 1 to 6 carbon atoms; R_8, R_9, R_{10}, R_{11}, R_{12} and R_{13}, which may be identical or different, are hydrogen or an alkyl radical containing 1 to 6 carbon atoms; m and n are zero or 1; X and Z, which may be identical or different, are

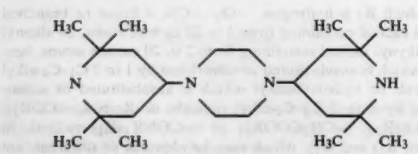


in which R_{18} is hydrogen or C_1–C_{20}-alkyl and R_{19} is hydrogen, C_1–C_{20}-alkyl or a —$(CH_2)_r$—$COOR_{14}$ radical, or a —$CONR_{14}R_{15}$ radical in which R_{14} and R_{15} are as defined above and r is an integer from 0 to 10; Y is



in which R_{20} is hydrogen or C_1–C_{20}-alkyl and R_{21} is hydrogen, C_1–C_{20}-alkyl, benzyl which is unsubstituted or substituted by 1 to 3 C_1–C_4-alkyl radicals, hydroxybenzyl which is unsubstituted or substituted by 1 to 3 C_1–C_4-alkyl radicals, 2,2,6,6-tetramethyl-4-piperidyl, 1,2,2,6,6-pentamethyl-4-piperidyl or a —OH, —NO_2, —$NR_{22}R_{23}$ or —NH—COR_{24} radical, in which R_{22} and R_{23}, which may be identical or different, are hydrogen, C_1–C_{20}-alkyl, benzyl or hydroxybenzyl substituted by 1 to 3 C_1–C_4-alkyl radicals and R_{24} is C_1–C_{20}-alkyl, phenyl which is unsubstituted or substituted by 1 to 3 C_1–C_8-alkyl radicals or hydroxyphenyl which is substituted by 1 to 3 C_1–C_4-alkyl radicals.

6. A compound of the formula



4,316,026

PROCESS FOR THE PREPARATION OF COPPER QUINOLINATE

Yoshihiro Hatano, Osaka; Seishi Ikegami; Kenji Itoh, both of Yao, and Mansuke Matsumoto, Amagasaki, all of Japan, assignors to Yamamoto Kagaku Gosei Co., Ltd., Yao, Japan

Filed Aug. 12, 1980, Ser. No. 177,694

Claims priority, application Japan, Aug. 14, 1979, 54-102756

Int. Cl.[3] **C07D** *213/807*

U.S. Cl. 546—5 **7 Claims**

1. A process for the preparation of copper quinolinate by oxidizing quinoline with hydrogen peroxide in a mixture of water and sulfuric acid in the presence of copper sulfate at a temperature of 55° to 75° C. and isolating copper quinolinate from the reaction media, wherein the molar ratio of sulfuric acid to quinoline is greater than 1 to 1, the molar ratio of hydrogen peroxide to quinoline is 10.8 to 1 or greater and the concentration of sulfuric acid is from about 10 to about 30% in said mixture.

4,316,027

7,7′-DIAMINO DERIVATIVES OF 2,2′-SPIRODIBENZOPYRANES

Hans Baumann, Wachenheim, and Andreas Oberlinner, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

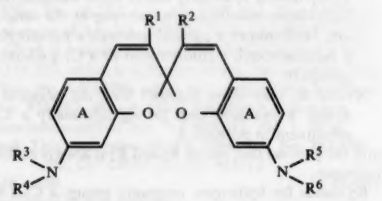
Division of Ser. No. 773,337, Mar. 1, 1977, Pat. No. 4,110,348. This application Apr. 6, 1978, Ser. No. 894,095

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1976, 2611600

Int. Cl.[3] **C07D** *491/22;* **C09B** *57/00*

U.S. Cl. 546—15 **6 Claims**

1. A dye intermediate of the formula



where R^1 is hydrogen, alkyl of 1 to 12 carbon atoms, phenyl which is unsubstituted or substituted by alkyl of 1 to 4 carbon atoms, methoxy, ethoxy, chlorine or bromine, or phenylalkyl of 7 to 10 carbon atoms, R^2 is hydrogen or R^1 and R^2 together are dimethylene, trimethylene or tetramethylene, which are unsubstituted or substituted by alkyl of 1 to 12 carbon atoms, R^3 and R^5 each are selected from the group consisting of trimethylene which is unsubstituted or substituted by 1 to 3 methyl and is bonded to the carbon atom in the 6-position or 6′-position of the benzene ring, R^4 and R^6 each are alkyl of 1 to 12 carbon atoms, cyano-, chlorine-, methoxy- or ethoxy-substituted alkyl of 2 to 4 carbon atoms, phenylalkyl of 7 to 10 carbon atoms, phenyl which is unsubstituted or substituted by alkyl of 1 to 4 carbon atoms, chlorine or bromine, or trimethylene bonded to the carbon atom in the 8-position or 8′-position of the benzene ring, and the substituents R^3, R^4, R^5 and R^6 may be identical or different and the rings A and A′ are unsubstituted or substituted by alkyl of 1 to 3 carbon atoms.

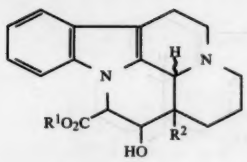
4,316,028

PROCESS FOR PRODUCING EBURNANE DERIVATIVES

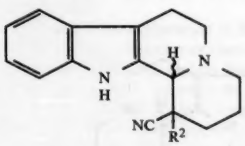
Junki Katsube, Toyonaka; Keiichi Ono, Osaka, and Hajime Kawakami, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Nov. 13, 1979, Ser. No. 93,606
Claims priority, application Japan, Nov. 20, 1978, 53-143841; Jan. 24, 1979, 54-7482; Jan. 25, 1979, 54-7849
Int. Cl.[3] C07D *461/00*
U.S. Cl. 546—51 12 Claims

4. A process for producing a compound of the formula:

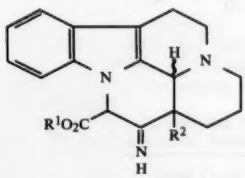


wherein R^1 is a C_1–C_6 alkyl group and R^2 is a hydrogen atom or a C_1–C_6 alkyl group, or a pharmaceutically acceptable acid addition salt thereof, which comprises allowing a compound of the formula:

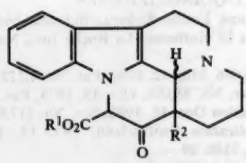


wherein R^2 is as defined above, to react with a compound of the formula:

wherein R^1 is as defined above and X is a halogen atom, hydrolyzing the resulting compound of the formula:



wherein R^1 and R^2 are each as defined above, in the presence of a mineral acid and reducing the resulting compound of the formula:



wherein R^1 and R^2 are each as defined above, with a metal hydride.

4,316,029

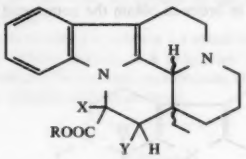
SYNTHESIS OF VINCAMINIC ACID DERIVATIVES

Guy Rossey, Cachan, France, assignor to Synthelabo, Paris, France

Filed Jun. 20, 1980, Ser. No. 161,359
Claims priority, application France, Jun. 22, 1979, 79 16030
Int. Cl.[3] C07D *461/00*
U.S. Cl. 546—51 7 Claims

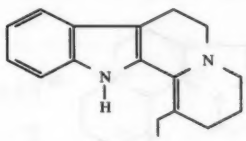
1. A process for the preparation of vincaminic acid derivatives of formula

(A)



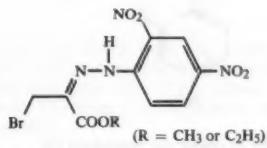
in which R is methyl or ethyl and X is hydroxy or hydrogen and Y is hydrogen or X and Y together form a carbon to carbon double bond, which process is characterised in that the enamine (1)

(1)



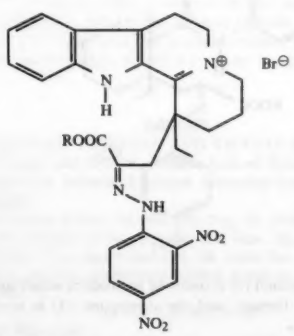
is reacted with the (2,4-dinitrophenyl)-hydrazone of ethyl or methyl bromopyruvate (2)

(2)



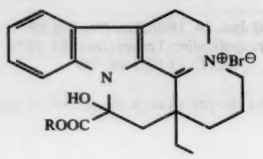
and then either the protective group is removed from the compound (3)

(3)



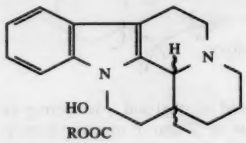
in order to obtain the cyclised compound (4)

(4)



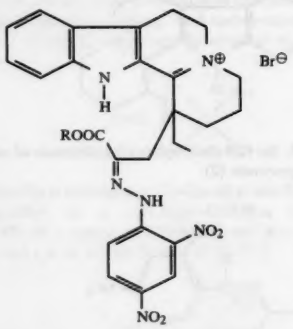
which is reduced in order to obtain the compound (6)

(6)



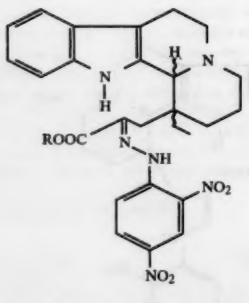
or the compound (3)

(3)



is reduced in order to obtain the compound (5)

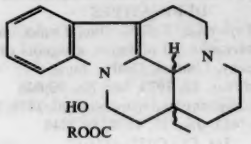
(5)



if desired compound (5) is resolved to produce either optically isomeric form thereof, and the compound (5) is treated as follows:

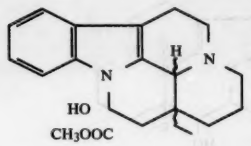
either (a) the protective group is removed therefrom in order to obtain the cyclised compound

(6)



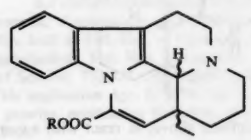
which, if desired, is transesterified, if R is C_2H_5 to give vincamine (7)

(7)

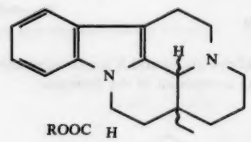


or (b) it is reacted, in formic acid, either with an about 15% strength solution of titanium (III) chloride in order to obtain ethyl apovincaminate (8,R=C_2H_5) or apovincamine (8,R=CH_3), or with an about 30% strength solution of titanium (III) chloride in order to obtain ethyl deoxyvincaminate (9,R=C_2H_5) or deoxyvincamine (9,R=CH_3)

(8)



(9)



respectively.

4,316,030

PHENYL-QUINOLIZIDINES

Rene Imhof, Wittnau, and Emilio Kyburz, Reinach, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

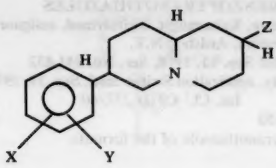
Division of Ser. No. 148,646, May 12, 1980, Pat. No. 4,272,627, which is a division of Ser. No. 85,096, Oct. 15, 1979, Pat. No. 4,236,010. This application Dec. 18, 1980, Ser. No. 217,888

Claims priority, application Switzerland, Oct. 13, 1978, 10654/78; Aug. 3, 1979, 7156/79

Int. Cl.³ C07D *455/02*

U.S. Cl. 546—138 **2 Claims**

1. A compound of the formula



VII

wherein X is hydrogen, fluorine, chlorine, lower alkoxy, lower alkyl or trifluoromethyl; Y is hydrogen, fluorine, chlorine, lower alkoxy or lower alkyl; and Z is a cleavable group selected from the group consisting of chlorine, bromine, mesyloxy or tosyloxy,

its racemate or an enantiomer thereof.

4,316,031
PROCESS FOR THE PREPARATION OF 2-MERCAPTOBENZOTHIAZOLE

Manfred Bergfeld, Erlenback; Hans-Georg Zengel, Kleinwallstadt, and Heinz Praetorius, Duren-Lendersdorf, all of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed Mar. 26, 1979, Ser. No. 23,986

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1978, 2816407

Int. Cl.³ C07D 277/72

U.S. Cl. 546—175 **11 Claims**

1. A process for the preparation of 2-mercaptobenzothiazole comprising heating a reaction mixture comprising nitrosobenzene, hydrogen sulfide and carbon disulfide in a molar ratio of about 1:1.5 to 4:1 to 3, respectively, to a temperature from about 200° to about 300° C., for a time sufficient to convert at least a portion of the reactants into 2-mercaptobenzothiazole.

2. A process for the preparation of 2-mercaptobenzothiazole comprising first reacting nitrosobenzene with hydrogen sulfide in a molar ratio of about 1:1.5 to 4, at a temperature from about 20° to about 100° C. for a period of time sufficient to substantially reduce the nitrosobenzene and subsequently reacting the resulting product mixture with from about 1 to about 3 mole equivalents of carbon disulfide per mole of originally charged nitrosobenzene, at a temperature from about 200° C. to about 300° C.

4,316,032
OXIMINO-IMINO-ISOINDOLINE METAL COMPLEXES USEFUL AS PIGMENTS

Peter Bitterli, Reinach, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

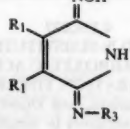
Filed Apr. 28, 1980, Ser. No. 144,382

Claims priority, application Switzerland, May 2, 1979, 4097/79

Int. Cl.³ C09B 57/10, 57/04

U.S. Cl. 548—109 **9 Claims**

1. A metal complex of a compound of formula I



I

in which

both R_1's are hydrogen or halogen or together form —S—CH_2—CH_2—S—or a condensed benzene ring which is unsubstituted or substituted by a total of up to four substituents selected from chlorine and bromine or by one nitro group, and

R_3 is hydrogen; phenyl; phenyl sustituted by up to three substituents selected from chlorine, bromine, methyl and methoxy or by one benzoylamino or N-phthalimido group; triazolyl; or thiazolyl; or a divalent 1,3- or 1,4-phenylene radical which is unsubstituted or substituted by a total of up to two substituents selected from chlorine, bromine, methyl, methoxy and nitro; or a divalent unsubstituted 1,4- or 2,6-naphthalene radical; which divalent radical links one further radical of formula I, wherein R_3 is a direct bond and the R_1 groups are the same as or different from the R_1 groups of the first compound of formula I,

which metal complex is either a 1:1 metal complex when R_3 is a divalent linking radical, or a symmetric or asymmetric 1:2 metal complex of monomeric compounds of formula I, and the metal is a divalent transition metal.

4,316,033
ALKOXYSILYLBENZOTRIAZOLES

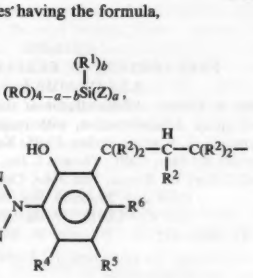
Ta-Yen Ching, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 30, 1980, Ser. No. 154,625

Int. Cl.³ C07F 7/18

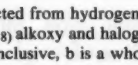
U.S. Cl. 548—110 **2 Claims**

1. Silylbenzotriazoles having the formula,



where Z is

R is a $C_{(1-8)}$ alkyl radical, R^1 is a $C_{(1-8)}$ alkyl or $C_{(6-12)}$ aryl radical, R^2 is selected from hydrogen and R, R^3 is selected from hydrogen, $C_{(1-8)}$ alkyl, $C_{(1-8)}$ alkoxy, carbalkoxy, hydroxy, amino and halogen, and Q—$(CH_2)_3$—$Si(OR)_3$, where Q is selected from



R^4—R^6 are selected from hydrogen and the same of different $C_{(1-8)}$ alkyl, $C_{(1-8)}$ alkoxy and halogen radicals, a is an integer equal to 1 to 3 inclusive, b is a whole number equal to 0 to 2 inclusive and the sum of a+b is equal to 1 to 3 inclusive.

4,316,034
ADDUCTS OF FUROXAN AND VICINAL DIKETONES

John Crosby, and John A. Milner, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

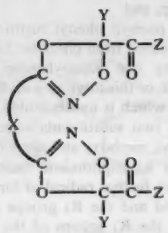
Continuation of Ser. No. 968,926, Dec. 13, 1978, abandoned, which is a division of Ser. No. 781,869, Mar. 28, 1977, Pat. No. 4,145,360. This application Feb. 19, 1980, Ser. No. 122,743

Claims priority, application United Kingdom, Apr. 1, 1976, 13302/76

Int. Cl.³ C07D 273/00

U.S. Cl. 548—124 **13 Claims**

1. An adduct having the structure



wherein X represents an acyclic or cyclic divalent hydrocarbon group optionally carrying one or more substituents which are inert towards diketo compounds and Y and Z are either separate monovalent hydrocarbon groups which may be the same or different, or are combined into one cyclic divalent hydrocarbon group, the hydrocarbon groups represented by Y and Z optionally carrying substituents which are inert towards furoxan compounds or reactive derivatives thereof.

4,316,035

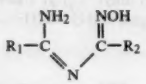
PREPARATION OF PERFLUORINATED 1,2,4-OXADIAZOLES

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Reinhold H. Kratzer, Irvine, Calif.; Kazimiera J. L. Paciorek, Corona del Mar, Calif.; Thomas I. Ito, Fountain Valley, Calif., and Robert W. Rosser, San Jose, Calif.

Filed Jun. 27, 1980, Ser. No. 163,838
Int. Cl.³ C07D *271/06*; C08G *73/06*
U.S. Cl. 548—131 **4 Claims**

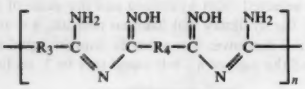
1. A process for preparing 1,2,4-oxadiazoles and polymers thereof which comprises:

(a) providing an imidoylamidoxime selected from the class consisting of



1

and



2

wherein

R_1 and R_2 are the same or different and are selected from the class consisting of (a) perfluoroalkyl and (b) perfluoroalkyl ether,

R_3 and R_4 are the same or different and are selected from the class consisting of perfluoroalkylene and perfluoroalkylene ether and

n is a positive integer,

(b) heating such imidoylamidoximes within the range of 40° to 100° C. for a period of 8 to 144 hours in the presence of an ammonia acceptor whereby the imidoylamidoxime group or groups are converted to 1,2,4-oxadiazole groups.

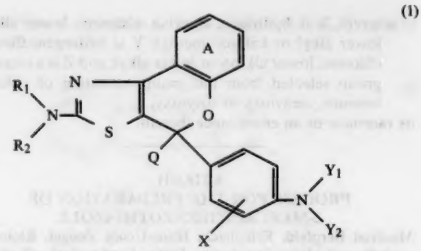
4,316,036

BENZOPYRANOTHIAZOLES

Jean C. Petitpierre, Kaiseraugst, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

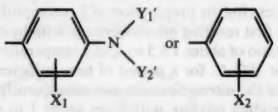
Filed Sep. 11, 1978, Ser. No. 941,432
Claims priority, application Switzerland, Sep. 19, 1977, 11405
Int. Cl.³ C07D *277/60*
U.S. Cl. 548—153 **5 Claims**

1. A benzopyranothiazole of the formula



(I)

wherein each of R_1 and R_2 independently represents hydrogen, alkyl of not more than 12 carbon atoms which is unsubstituted or substituted by halogen, hydroxyl, cyano or lower alkoxy, or represents cycloalkyl, phenyl, benzyl, or phenyl or benzyl which is substituted by halogen, lower alkyl or lower alkoxy, or R_1 and R_2 together with the nitrogen atom to which they are attached represents a 5- or 6-membered heterocyclic radical selected from the group consisting of pyrrolidino, piperidino, pipecolino, morpholino, thiomorpholino or piperazino, or a N-substituted carbazole, Q represents hydrogen, lower alkyl, benzyl or groups of the formulae (1a) or (1b)



(1a) (1b)

each of X, X_1 and X_2 represents hydrogen, halogen, lower alkyl or lower alkoxy, each of Y_1, Y_2, Y_1 and Y_2 represents hydrogen, alkyl of not more than 12 carbon atoms which is unsubstituted or substituted by halogen, hydroxyl cyano or lower alkoxy, or represents cycloalkyl, phenyl, benzyl, or phenyl or benzyl which is substituted by halogen, lower alkyl or lower alkoxy, or each of the pair of substituents Y_1 and Y_2 and Y_1 and Y_2, together with the nitrogen atom to said pair is attached, independently represednt a 5- or 6-membered heterocyclic radical selected from the group consisting of pyrrolidino, piperidino, pipecolino, morpholino, thiomorpholino or piperazino, or a N-unsubstituted carbazole and the ring A is unsubstituted or substituted by halogen, nitro, lower alkyl, lower alkoxy, phenoxy or an amino group which is unsubstituted or substituted by lower alkyl, phenyl or benzyl.

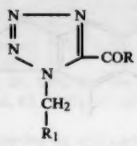
4,316,037

N-BENZYL AND N-SUBSTITUTED BENZYL TETRAZOLE-5-CARBOXYLIC ACIDS AND THE PREPARATION THEREOF

John H. Sellstedt, Pottstown, and Dieter H. Klaubert, West Chester, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Jan. 21, 1977, Ser. No. 761,149
Int. Cl.³ C07D *257/02*
U.S. Cl. 548—253 **12 Claims**

1. A compound of the formula:



in which

R is —Om, halo or lower alkoxy wherein M is hydrogen, an alkali metal cation or an alkaline earth metal cation; and

R_1 is phenyl, 4-methoxyphenyl, 2,4-dimethoxyphenyl, or 2,4,6-trimethoxyphenyl.

12. A process for the production of a lower alkyl ester of a 1H-tetrazole-5-carboxylic acid which comprises adding an azide of the formula $R_1—CH_2—N_3$ in which R_1 is selected from the group consisting of phenyl, 4-methoxyphenyl, 2,4-dimethoxyphenyl and 2,4,6-trimethoxyphenyl, to a lower alkyl cyanoformate at a temperature between about 85° C. to about 250° C. in a closed vessel under autogenous pressure for a time sufficient to effect the addition reaction.

4,316,038
1-(2-METHOXYETHYL)-2-METHYL-4-PHENYL-2-IMIDAZOLINE

Sivaraman Raghu, Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 63,278, Aug. 2, 1979, Pat. No. 4,245,102, which is a continuation of Ser. No. 958,221, Nov. 6, 1978, abandoned. This application May 21, 1980, Ser. No. 152,266

Int. Cl.³ C07D *233/06*

U.S. Cl. 548—352 **1 Claim**

1. The compound: 1-(2-methoxyethyl)-2-methyl-4-phenyl-2-imidazoline.

4,316,039
SUBSTITUTED 3-AMINOPYRAZOLES

Peter Plath, Ludwigshafen; Bruno Wuerzer, Limburgerhof, and Wolfgang Rohr, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

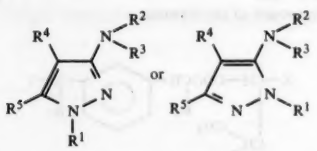
Division of Ser. No. 951,566, Oct. 16, 1978, Pat. No. 4,260,775. This application Aug. 25, 1980, Ser. No. 180,950

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1977, 2747531

Int. Cl.³ C07D *231/38*

U.S. Cl. 548—362 **1 Claim**

1. A pyrazole of the formula



where

R^1 is hydrogen,

R^2 is hydrogen or lower alkyl,

R^3 is n-propyl, isopropyl, n-butyl, sec-butyl, isobutyl, tert-butyl, 3-methyl-2-butyl, pentyl-2 or pentyl-3 or one of said groups substituted by lower alkoxy or is a 5-, 6-, or 7-membered cycloalkyl,

R^4 is methoxycarbonyl, and

R^5 is hydrogen or methyl, and the agriculturally acceptable acid addition salts thereof.

4,316,040
4-METHOXYCARBONYL-PYRAZOLE ETHER DERIVATIVES

Peter Plath, Ludwigshafen; Wolfgang Rohr, Mannheim; Bruno Wuerzer, Limburgerhof, and Rainer Becker, Bad Durkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

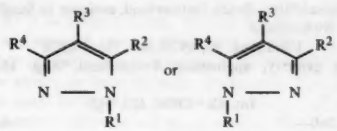
Continuation of Ser. No. 49,506, Jun. 18, 1979, abandoned. This application Jan. 14, 1981, Ser. No. 224,938

Claims priority, application Fed. Rep. of Germany, Jul. 4, 1978, 2829289

Int. Cl.³ C07D *231/18, 231/20*

U.S. Cl. 548—377 **2 Claims**

1. A pyrazole ether derivative of the formula



where R^1 denotes hydrogen, R^2 denotes $Y—R^7$, Y denoting oxygen or sulfur and R^7 denoting an alkyl radical of from 3 to 8 carbon atoms, an aryl radical of from 6 to 10 carbon atoms or a cycloalkyl radical of from 5 to 8 carbon atoms, said radicals being unsubstituted or mono- or disubstituted by lower alkyl, halogen, halo lower alkyl, cycloalkyl of 5 to 6 carbons, aryloxy of 6 to 10 carbons in the aryl moiety, lower alkoxy, lower alkylthio, nitro, cyano, lower alkylaminocarbonyl, di-lower alkylaminocarbonyl, lower acyloxy, acylamino or o-lower alkylcarbonyl, R^3 denotes the methoxy carbonyl radical and R^4 denotes hydrogen or methyl, and acid addition salts of agriculturally acceptable acids.

4,316,041
LIQUID CRYSTAL SILANES

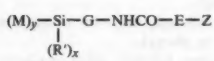
George E. Totten, West Haverstraw, N.Y., and Thomas C. Williams, Ridgefield, Conn., assignors to Union Carbide Corporation, New York, N.Y.

Filed Feb. 19, 1980, Ser. No. 122,482

Int. Cl.³ C09K *3/34;* **G02F** *1/13;* **C07F** *7/10*

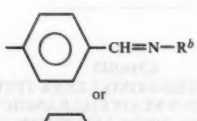
U.S. Cl. 556—420 **14 Claims**

1. A liquid crystal compound of the general formula



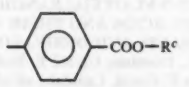
(I)

wherein y is an integer having a value of from 1 to 3; x is an integer having a value of from 0 to 2; the sum of x and y is 3 M is methoxy, ethoxy, chloro or dimethylamino; R′ is hydrogen, methyl or ethyl; G is alkylene having from 2 to 4 carbon atoms, or arylene or aralkylene having from 6 to 8 carbon atoms; E is —O— or —NH—; and Z is a group of the formula:



(A)

or



(B)

wherein R^b is an unsubstituted or substituted phenyl, fluorenyl, fluorenonyl or anthracenyl group; R^c is an unsubstituted or substituted phenyl group; wherein the substituents on said groups can be chloro, nitro, methylthio, bromo, iodo, tertiary

amino, acyl having from 2 to 12 carbon atoms, dialkylamino in which the alkyl group has from 1 to 5 carbon atoms, alkoxy having from 1 to 6 carbon atoms, alkyl having from 1 to 10 carbon atoms, cyano, esters which may contain substituted aryl or aralkyl moieties of from 1 to 12 carbon atoms or carbonates containing an alkyl group of from 1 to 10 carbon atoms.

4,316,042

SUBSTITUTED CARBOXYALKOXYAMINODIHYDROBENZOPHENONES

Peter Fünfschilling, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

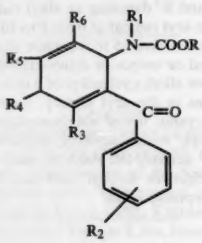
Filed Aug. 15, 1979, Ser. No. 67,070

Claims priority, application Switzerland, Aug. 16, 1978, 8793/78

Int. Cl.³ C07C *125/065*

U.S. Cl. 560—27 **6 Claims**

1. A compound of the formula:



wherein

R_1 is hydrogen, alkyl of 1 to 5 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, alkyl of 1 to 4 carbon atoms substituted by cycloalkyl of 3 to 6 carbon atoms, polyhaloalkyl of 1 to 5 carbon atoms, allyl, propargyl, benzyl or phenyl,

R_2 is hydrogen, halogen, alkyl or alkoxy, each of 1 to 4 carbon atoms, trifluoromethyl, nitro, alkylamino or dialkylamine, wherein the alkyl groups have 1 to 4 carbon atoms, or phenyl,

R_3 is hydrogen, halogen, alkyl or alkoxy, each of 1 to 4 carbon atoms, or phenyl,

R_4 is hydrogen, nitro, halogen, alkyl or alkoxy each of 1 to 4 carbon atoms or phenyl,

R_5 is hydrogen, halogen, alkyl, alkylthio or alkoxy each of 1 to 4 carbon atoms, nitro, trifluoromethyl or phenyl,

R_6 is hydrogen, halogen, alkyl of 1 to 4 carbon atoms, benzyl or phenyl, and

R is alkyl of 1 to 4 carbon atoms.

4,316,043

[(5,6,9A-SUBSTITUTED-3-OXO-1,2,9,9A-TETRAHYDRO-3H-FLUOREN-7-YL)OXY]ALKANOIC AND CYCLOALKANOIC ACIDS AND THEIR ANALOGS, ESTERS, SALTS AND DERIVATIVES

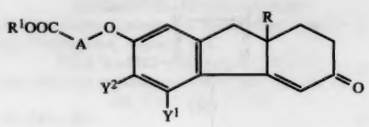
Edward J. Cragoe, Jr., Lansdale; Gerald E. Stokker, Gwynedd Valley, and Norman P. Gould, Lansdale, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Dec. 19, 1980, Ser. No. 218,335

Int. Cl.³ C07C *69/94*

U.S. Cl. 560—53 **32 Claims**

1. A compound of the formula:



wherein R is H, and lower alkyl, branched or unbranched; R^1 is H, lower alkyl, such as methyl, ethyl, propyl, isopropyl, butyl, isobutyl, tert.-butyl and the like; lower alkenyl, such as, allyl, 2-butenyl and the like; lower alkynyl, such as propargyl, butynyl and the like; lower cycloalkyl, such as cyclobutyl, cyclopentyl and the like; substituted lower alkyl, where the substituent is carboxy, lower alkoxycarbonyl, oxo, hydroxy, lower alkoxy, halo, lower acyloxy, lower dialkylamino, sulfamoyl, pyridyl, furyl, tetrahydrofuryl, aryl 1-methylpiperidyl, morpholinyl, substituted cycloalkyl, such as carboxycycloalkyl, and the like; pyrrolidinyl, 1-methylpiperazinyl, thienyl, and the like; heterocyclic, such as imidazolyl, pyridyl, thiazolyl, pyrazinyl, furyl, and the like; aryl, such as phenyl, carboxyphenyl hydroxymethylphenyl and the like; Y^1 and Y^2 are independently Cl and Ch_3; A is $(CH_2)_2$ or

where R^2 is H, methyl or ethyl, R^3 is H, F or methyl and R^2 and R^3, may be joined together to form the ring $>C(CH_2)_n$ where n is the integer 2, 3 or 4; and pharmaceutically acceptable salts thereof.

4,316,044

ISOVALERIC ACID DERIVATIVES

Keiichi Ishimitsu, Odawara; Isamu Kasahara, Ohiso; Tomio Yamada, Hiratsuka; Michihiko Matsuda, Ohiso; Hidemitsu Takahashi, and Shuichi Soma, both of Hiratsuka, all of Japan, assignors to Nippon Soda Company Limited, Tokyo, Japan

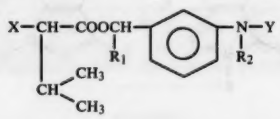
Filed Aug. 29, 1980, Ser. No. 182,341

Claims priority, application Japan, Sep. 7, 1979, 54-114235; Jan. 14, 1980, 55-2897; Jan. 15, 1980, 55-48745

Int. Cl.³ C07C *69/76, 69/62;* A61K *35/55*

U.S. Cl. 560—105 **10 Claims**

1. A compound of the formula



wherein

X is phenyl substituted with halogen, lower alkyl, lower haloalkyl, lower halalkoxy, 3,4-methylenedioxy or nitro group, naphthyl, styryl or lower alkenyl substituted with chlorine,

R_1 is hydrogen, cyano or ethynyl,

R_2 is hydrogen, lower alkyl, lower alkenyl or lower alkynyl, and

Y is phenyl or halophenyl.

4,316,045

CATALYTIC PROCESS FOR THE PRODUCTION OF ARYL CARBOXYLATES

Lawrence C. Costa, Nanuet, N.Y., assignor to The Halcon SD Group, Inc., New York, N.Y.

Filed Aug. 29, 1980, Ser. No. 182,512
Int. Cl.[3] C07C 67/00
U.S. Cl. 560—130 7 Claims

1. A process for preparing an aryl carboxylate which comprises contacting (a) an arylmetallo carboxylate of the formula:

$$R^1{}_n\text{—}M\text{—}X^1{}_m$$

wherein R^1 is a mono- or polynuclear substituted or unsubstituted aryl group having a total of from 6 to 18 carbon atoms; M is a metal cation in its highest oxidation state selected from the group consisting of Hg, Sn, Tl, Pb and Cd cations; X^1 is a carboxylate group of from 2 to 20 carbon atoms derived from an aliphatic or aromatic mono- or di- carboxylic acid; and n and m are each integers of from 1 to (t−1), wherein t is the valence of the M metal cation, with the proviso that n+m=t, with (b) an organic peracid of the formula:

$$R^2\text{—}\underset{\underset{O}{\|}}{C}\text{—}O\text{—}O\text{—}H$$

wherein R^2 is H, alkyl of from 1 to 20 carbon atoms, aryl of from 6 to 14 carbon atoms, alkaryl or aralkyl of from 7 to 20 carbon atoms, cycloalkyl of from 3 to 12 carbon atoms, and halogenated derivatives of the foregoing groups, in liquid medium in the presence of a catalytic amount of an aryl iodide of the formula:

$$R^3\text{—}I$$

wherein R^3 is mono- or polynuclear aryl having a total of from 6 to 18 carbon atoms to form the corresponding aryl carboxylate.

4,316,046

PROCESS FOR THE PREPARATION OF ARYL CARBOXYLATES

Lawrence C. Costa, Nanuet, N.Y., assignor to The Halcon SD Group, Inc., New York, N.Y.

Filed Aug. 29, 1980, Ser. No. 182,529
Int. Cl.[3] C07C 67/00
U.S. Cl. 560—130 7 Claims

1. A process for preparing an aryl carboxylate which comprises contacting (1) an arylmetallo carboxylate selected from the group consisting of compunds having the formula:

$$R^1{}_n\text{—}M\text{—}X^1{}_m$$

wherein R^1 is as defined below; M is a metal cation in its highest oxidation state selected from the group consisting of Hg, Sn, Tl, Pb and Cd; X^1 is a carboxylate group of from 2 to 20 carbon atoms derived from an aliphatic or aromatic mono- or di-carboxylic acid; and n and m are each integers of from 1 to (t−1), wherein t is the valence of the metal cation, with the proviso that n+m=t, with (2) at least one aryliodoso carboxylate selected from the group consisting of compounds of the formula:

wherein R^2 is as defined below, X^2 and X^3 are the same or different and are each carboxyl groups derived from aliphatic saturated or aromatic monocarboxylic acids having from 2 to 20 carbon atoms, or from aliphatic saturated or aromatic dicarboxylic acids having from 2 to 20 carbon atoms, R^1 and R^2 being the same or different and being selected from the group consisting of substituted or unsubstituted mono- or polynuclear aryl moieties of 6-18 carbon atoms, the substituents, if present, being selected from the group consisting of alkyl of 1 to 12 carbon atoms, cycloalkyl of 4 to 12 carbon atoms, and heterocyclic having from 6 to 10 member rings containing one or more O or S ring atoms, cyano, keto, having from 2 to 10 carbon atoms, carboxylate having from 1 to 10 carbon atoms and carboalkoxy having from 2 to 10 carbon atoms, said contacting being in liquid medium and at elevated temperature to form the corresponding aryl carboxylate.

4,316,047

PREPARATION OF C_1–C_4-ALKYL PENT-3-ENOATES

Rudolf Kummer, Frankenthal; Franz-Josef Weiss, Weinheim; Heinz-Walter Schneider, and Volker Taglieber, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 7, 1980, Ser. No. 166,569
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1979, 2933581
Int. Cl.[3] C07C 67/38
U.S. Cl. 560—206 3 Claims

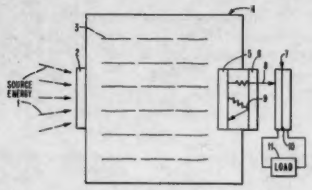
1. A process for producing C_1–C_4-alkyl pent-3-enoates which comprises: partially hydrogenating a butadiene-containing hydrocarbon mixture containing more than 0.1% by weight of butynes to reduce the butyne content of the mixture to 0.1% or less by weight and thereafter reacting the so treated mixture with carbon monoxide and an alkanol of 1 to 4 carbon atoms in the presence of a cobalt carbonyl catalyst and a tertiary nitrogen base having a pK_A of from 3 to 11, at 100°–140° C. and under a pressure of from 300 to 1,000 bar.

4,316,048

ENERGY CONVERSION

Jerry M. Woodall, Bedford Hills, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 20, 1980, Ser. No. 161,982
Int. Cl.[3] H01L *31/04*
U.S. Cl. 136—253 19 Claims



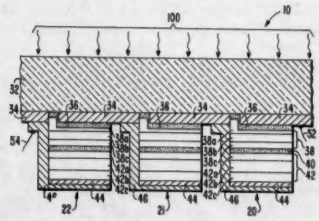
1. An energy system comprising in combination:
a thermally insulated energy storage container;
an energy storage material within said container,
said energy storage material having the combined characteristics of:
a thermal conductance in excess of 0.1 calorie per square centimeter per centimeter per degree per second at room temperature,
a latent heat of fusion of the order of 1 Kilocalorie per mole, and
a melting point in the vicinity of 1300° Kelvin and above;
energy input means for delivering source energy outside said container as thermal energy to said material; and
energy output release means for delivering a portion of the energy stored in said material to a load under conditions responsive to the requirements of said load.

4,316,049

HIGH VOLTAGE SERIES CONNECTED TANDEM JUNCTION SOLAR BATTERY

Joseph J. Hanak, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 70,513, Aug. 28, 1979, abandoned. This application Sep. 29, 1980, Ser. No. 192,333
Int. Cl.[3] H01L *31/06*
U.S. Cl. 136—244 16 Claims



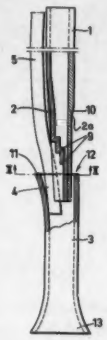
1. An amorphous silicon solar battery comprising:
(a) a transparent substrate having a major surface which is incident to solar radiation and an opposed major surface;
(b) a plurality of spaced apart transparent conductive oxide strips on said opposed major surface;
(c) a plurality of tandem-junction, hydrogenated amorphous silicon solar cells fabricated over and electrically contacting a major portion of each of said transparent conductive oxide strips, said solar cells having a plurality of semiconductor layers of hydrogenated amorphous silicon having regions of differing conductivity type wherein said layers are separated by a tunnel junction, said solar cells having width such that the loss of power is less than the loss of power from the incorporation of a metallic grid electrode into the transparent conductive oxide; and
(d) means for interconnecting said solar cells in series.

4,316,050

EARTH GROUND ASSEMBLY COMPRISING A DRIVING POINT, A DRIVING ROD, AND A CONTINUOUS CONDUCTOR WIRE

Lars M. Bergmark, Skelleftea, Sweden, assignor to F S Elteknik AB, Skellaftea, Sweden

Continuation of Ser. No. 940,148, Sep. 6, 1978, abandoned. This application Jul. 31, 1980, Ser. No. 174,343
Claims priority, application Sweden, Sep. 14, 1977, 7710314
Int. Cl.[3] H01R *4/66*
U.S. Cl. 174—7 1 Claim



1. Electrical grounding apparatus comprising an electrical ground conductor in the form of a continuous conductor wire, driving means in the form of a tubular driving rod arranged to be driven into the ground, a tubular driving point surrounding the lower end portion of the driving rod for connecting said wire to said driving rod by clamping the lower end portion of said wire to said lower end portion of said driving rod to thereby carry the wire when the driving rod is driven into the ground, said driving point having an upper portion provided with an outwardly extending lip through which the conductor wire extends and said driving point having a lower portion terminating below the lower end portion of the driving rod, a plurality of joint rod sections for extending the driving rod in length as the latter is driven into the ground with the continuous conductor wire extending along the outside of the driving rod and the connected joint rod sections, said driving rod having at the lower end portion a laterally facing curved depression receiving the lower end portion of the conductor wire, said depression being formed with stepped projections located in sequence in the axial direction of the driving rod and said depression extending axially and decreasing in depth toward zero in a direction opposite to the driving direction, said driving rod having a longitudinally extending portion of reduced cross-section arranged opposite said depression in order to further reduce the cross-sectional area of the driving rod at its end portion, said driving point having a length greater than the length of said portion of reduced cross-section and being formed at its lower end with a planar tip disposed below the lower end of the driving rod and having a width exceeding the width of at least those portions of the driving means along the outside of which the conductor wire extends, said planar tip being arranged in the same plane as said outwardly extending lip in the upper portion of the driving point, said driving point surrounding that portion of the driving rod having said depression and said portion of reduced cross-section, and said driving point also surrounding a straight portion of the conductor wire which is in said depression to jam the

conductor wire firmly against the bottom of said depression and its stepped projections.

4,316,051

PARTITION INSULATOR HAVING A PREDETERMINED RUPTURE BEHAVIOR

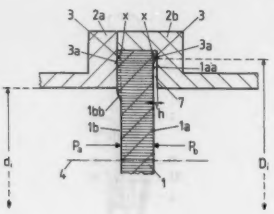
Georg-Heinz Krieter, Wurenlos, and Gerhard Mauthe, Birmenstorf, both of Switzerland, assignors to BBC Brown, Boveri & Company, Ltd., Baden, Switzerland

Filed Mar. 12, 1979, Ser. No. 19,601

Claims priority, application Switzerland, Mar. 13, 1978, 2689/78

Int. Cl.³ H01B *17/26*; H02B *13/02*

U.S. Cl. 174—11 R **15 Claims**



1. A partition insulator having a predetermined rupture behavior, especially for use in electrical switchgear, comprising:

a partition insulator member;

partition insulator holder means for supporting the partition insulator member at an edge of the partition insulator member;

a first bearing provided between a first face of the partition insulator member and the partition insulator holder means; and

a first open slot provided between said first face of the partition insulator member and said partition insulator holder means, said first open slot having an extent corresponding to a predetermined rupture pressure of the partition insulator member.

4,316,052

GAS INSULATED TRANSMISSION LINE HAVING TWO-LEGGED SPACERS DISPOSED IN A RECEIVING STRUCTURE

Setsuyuki Matsuda, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 17, 1980, Ser. No. 160,246

Claims priority, application Japan, Jun. 25, 1979, 54-80900

Int. Cl.³ H01B *9/06*; H02G *5/06*

U.S. Cl. 174—14 R **4 Claims**

1. A gas insulated transmission line comprising:

a plurality of cylindrical sheath sections having at least one conductor therein and being lengthwise connected to one another;

an electrical insulating gas filling the interior of said sheath sections;

a two-leg type insulating spacer, having two ends, mounted to said conductor for insulatably supporting said conductor within said sheath sections; and

receiving means disposed in said sheath sections and extending axially throughout the length of the connected sheath sections and normal to said spacer ends and receiving said two ends of said insulating spacer,

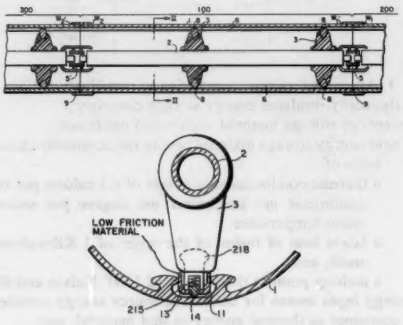
said receiving means comprising grooves formed integrally with each sheath section and extending throughout the length of each sheath section, each groove having two edges with portions which protrude in opposite directions respectively, and impurity capture grooves formed between said protruding portions and the inner surface of the sheath sections.

2. A gas insulated transmission line comprising:

a plurality of cylindrical sheath sections having at least one conductor therein and being lengthwise connected to one another;

an electrical insulating gas filling the interior of said sheath sections;

a two-leg type insulating spacer, having two ends, mounted to said conductor for insulatably supporting said conductor within said sheath sections, each end of said insulating



spacer being formed of a material different from the material from which the remainder of the insulating spacer is formed; and

receiving means disposed in said sheath sections and extending axially throughout the length of the connected sheath sections and normal to said spacer ends and receiving said two ends of said insulating spacer, each end of the insulating spacer being coated with a material low in coefficient of friction and having a contact member biased into contact with the bottom surface of the respective groove by means of a spring.

4,316,053

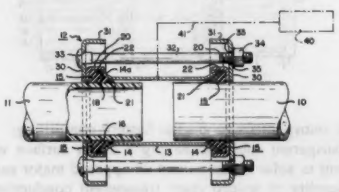
PIPE COUPLINGS AND COUPLING GASKETS

Paul F. Rieffle, Pittsburgh, Pa., assignor to Coupling Systems, Inc., Pittsburgh, Pa.

Filed Sep. 24, 1979, Ser. No. 77,794

Int. Cl.³ H01R *4/64*

U.S. Cl. 174—84 S **7 Claims**



1. A pipe coupling providing electrical continuity between all parts thereof comprising an elongate cylindrical conductive sleeve having an inner diameter sufficient to permit insert of the ends of two pipes to be coupled, an annular recess at each end of said sleeve, an annular resilient gasket at each recess adapted to fit around the pipe ends being joined and substantially within said recess with a portion extending axially from said recess, said axially extending portion having a radial shoulder generally axially aligned with the end of said sleeve, a

conductive end cap at each end of said sleeve, said end caps having an annular skirt portion encircling said axially extending portion of said gasket and the end of said sleeve and spaced from said sleeve and an end wall portion surrounding the pipe ends being joined and pressing axially on the gasket, compression means acting on said end caps to compress the resilient gasket sealingly into said annular recesses and against the pipe ends being joined, a metallic conductive helix made from metal wire, said wire being of triangular cross section with an apex on the external periphery of the helix in each gasket at a junction of the gasket with the pipe end and sleeve, said helix having a substantial exposed portion free from said resilient gasket and making electrical contact with said sleeve and adjacent pipe end and resilient conductor means in at least one of the junction of an end cap, the sleeve and a radial shoulder on said gasket and a junction of the gasket with the pipe end and end cap, said conductive means having substantial exposed portions free of said resilient gasket and making electrical contact between at least one of said sleeve and end cap and said end cap and pipe end.

4,316,054

CONNECTION BETWEEN CORE AND CASING OF A STRUCTURE HAVING AN AGGLOMERATED FIBRE CORE

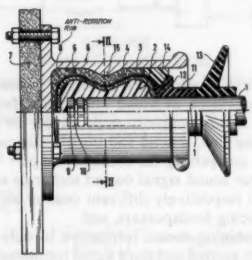
Michel Willem, Abrest, France, assignor to Societe Anonyme dite: CERAVER, Paris, France

Filed Dec. 17, 1979, Ser. No. 104,228

Claims priority, application France, Dec. 27, 1978, 78 36429

Int. Cl.³ H01B *17/14, 17/42*

U.S. Cl. 174—140 S **8 Claims**



1. A structure for transmitting high mechanical stresses, said structure having an elongate core, which includes at least one rod made of agglomerated fibres, and at least one fixing means fixed to an end of the core, said fixing means including a casing, a wedging member located on the core and positioned within said casing, said wedging member being flared on either side of an intermediate zone thereof, so as to exert radial compression or jamming stresses on the rod in the casing and to maintain these stresses at least partially in a zone of the structure located in the casing, even when the structure is not subjected to any mechanical loading, characterized in that the wedging member is formed by a mass of resin moulded onto the end of the rod, a resilient cap covering the resin mass, and a thin metal sheathing shrink-fitted over the resilient cap, said wedging member being embedded in said casing, whereby the structure is particularly resistant to high bending stresses.

4,316,055

STREAM/BLOCK CIPHER CRYTOGRAPHIC SYSTEM

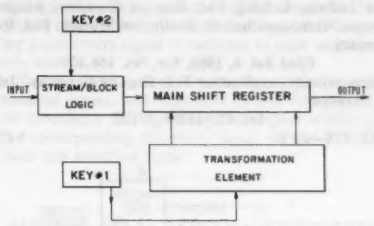
Horst Feistel, Mount Kisco, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1976, Ser. No. 755,898

Int. Cl.³ H04L *9/00*

U.S. Cl. 178—22.06 **14 Claims**

1. A key-controlled cryptographic system capable of selectively performing stream or block mode cryptographic transformations on an incoming data set, said system including means for storing a user supplied key, means for entering said data set into said system for cryptographic transformation, a main reconfiguration means comprising a shift register whose input is a function of said user supplied key, a transformation element operatively connected to said main reconfiguration means for cryptographically transforming data located in said main reconfiguration means, means for causing said transformation element to perform consecutive cryptographic transformations of data located in said main reconfiguration means for a predetermined number of cycles, means for selectively utilizing the complete contents of said main reconfiguration means as a full cryptographically transformed block of data in block mode operation, or a pseudo-random number stream which is combined serially in an inverse mathematical function with said incoming data set in serial mode operation.



4,316,056

CONTROL CIRCUIT FOR ELECTROMAGNETICALLY-OPERATED RECORDERS IN TELEPRINTING DEVICES

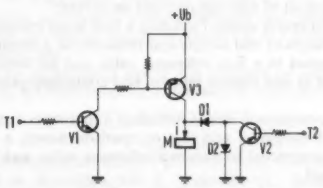
Reiner Lichti, Germering, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 24, 1980, Ser. No. 143,200

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1979, 2922521

Int. Cl.³ H04L *21/00;* **B41J** *9/10;* **H01H** *47/32*

U.S. Cl. 178—23 R **5 Claims**



1. A circuit for controlling an electromangetic coil-operated device comprising:

first and second switching transistors respectively operated by first and second base-supplied control signals, each control signal having at least one change-of-state with the change of state of said second control signal occurring after the change of state of said first control signal;

a control transistor connected between said coil and an operating voltage source and connected at its base to said first switching transistor for selective energization of said coil when said first switching transistor is conducting; and

a first diode connected between the collector of said second switching transistor and said coil,

whereby current inductively stored in said coil before said change of state of said first control signal flows through said

diode as a maintenance current between said change of state of said first control signal and said change of state of said second control signal and whereby said change of state of said second control signal disconnects said coil.

4,316,057

CIRCUIT ARRANGEMENT FOR THE AUTOMATIC, ADAPTIVE DISTORTION CORRECTION OF RINGINGS OF AT LEAST THREE-STAGE BASE BAND SIGNAL

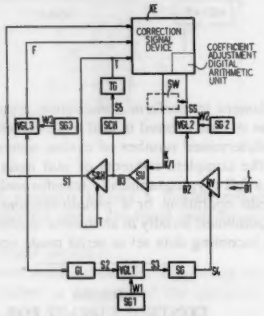
Volker Ludwig, Gelting, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 4, 1980, Ser. No. 156,409

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1979, 2928424

Int. Cl.³ H04L *25/02*

U.S. Cl. 178—63 E **9 Claims**



1. A circuit arrangement for the automatic, adaptive, temporal distortion correction of the ringings of an at least three-stage base band signal transmitter over a loaded line, comprising:

a controlled-gain amplifier including an input connection to the line, a control input and an output;

a summer including a first input connected to said output of said controlled-gain amplifier, a second input and an output;

a sample-and-hold circuit including an input connected to said output of said summer and an output;

first comparison means including a first input connected to said output of said sample-and-hold circuit, a second input connected to a first reference value and an output connected to said control input of said controlled-gain amplifier;

second comparison means including a first input connected to said output of said first comparison means, a second input connected to a second reference value, and an output; and

correction signal means including a first input connected to said output of said sample-and-hold circuit and a second input connected to said output of said second comparison means and an output connected to said second input of said summer, and operable to produce a correction signal for said summer.

4,316,058

SOUND FIELD TRANSMISSION SYSTEM SURROUNDING A LISTENER

Roy M. Christensen, Titusville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 9, 1972, Ser. No. 251,836

Int. Cl.³ H04S *3/00*; H04H *5/00*

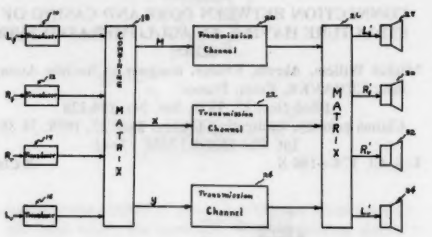
U.S. Cl. 179—1 GQ **13 Claims**

1. In a three-channel system for reproduction of sound field information surrounding a listener including a plurality of sound sources disposed in four spatial quadrants, said system comprising:

(a) means for providing a first electrical signal (M) representative of the sum of the amplitudes of sound signals produced by said plurality of sources,

(b) means for providing a second electrical signal (X) representative of the sum of amplitudes of sound source signal components directed along a pair of orthogonal axes in a first pair of adjacent spatial quadrants minus the sum of amplitudes of sound source signal components directed along said axes in a second pair of adjacent spatial quadrants, said second pair of quadrants being adjacent to said first pair,

(c) means for providing a third electrical signal (Y) representative of the sum of amplitudes of sound source signal components directed along said axes in a first quadrant of said first pair and an adjacent second quadrant of said second pair minus the sum of amplitudes of sound source signal components directed along said axes in a second quadrant of said first pair and an adjacent first quadrant of said second pair, and



(d) only first, second and third signal transmission channels for transmission of sound information from said sources having inputs coupled, respectively, to said means for providing first, second and third electrical signals;

apparatus comprising the combination of:

at least four sound signal output terminals suitable for coupling to respectively different ones of an array of sound reproducing loudspeakers, and

signal combining means responsive to only the outputs of said first, second and third signal transmission channels for supplying to each of said sound signal output terminals a signal proportional to the output of said first channel and for supplying to each of said sound signal output terminals a respectively different linear combination of signals proportional to outputs of said second and third channels, said combinations being determined according to an intended spatial orientation of the loudspeakers of said array relative to the spatial orientation of said orthogonal axes, and weighted relative to said supplied signal proportional to the output of said first channel such that, in reproduction of sound originating from only a single one of said quadrants, sound emanation from the opposed quadrant is substantially suppressed.

4,316,059

GAIN CONTROLLER FOR A TELECONFERENCING BRIDGE

Arpad G. Toth, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jun. 10, 1980, Ser. No. 158,218

Int. Cl.³ H04M *3/56*

U.S. Cl. 179—1 CN **4 Claims**

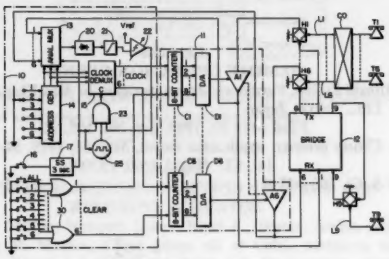
1. A gain controller for normalizing signal levels from a plurality of remote stations, each of which is connected to a teleconferencing bridge; the gain controller comprising:

a signal multiplexer for connecting a test signal from one of the remote stations to a signal level detector in response to

a selected channel address to generate a control signal which is proportional to the level of the test signal;

a demultiplexer responsive to the selected channel address for connecting the control signal to a storage circuit associated with said one remote signal;

an address generator for transmitting the selected channel address to the multiplexer and demultiplexer; and



separate variable gain amplifiers connecting each of the remote stations to the teleconferencing bridge, means for utilizing the control signal in the storage circuit associated with said one remote station to control the variable gain amplifier connecting said one remote station to the teleconferencing bridge, so that the gain of each amplifier is proportional to the magnitude of the control signal stored in the storage circuit so as to normalize the gain of the channels connected to the teleconferencing bridge.

4,316,060

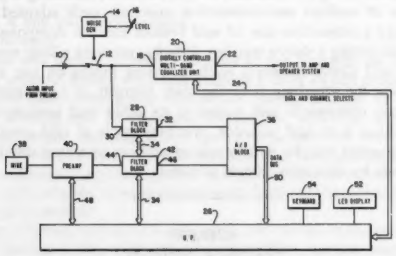
EQUALIZING SYSTEM

Robert W. Adams, Medford, and Leslie B. Tyler, Newtonville, both of Mass., assignors to DBX, Inc., Newton, Mass.

Filed Jan. 4, 1980, Ser. No. 109,487

Int. Cl.³ H03J *5/24*

U.S. Cl. 179—1 D **25 Claims**



1. For use in an audio signal processing apparatus of the type including a loudspeaker system, an equalizing system for modifying an input electrical signal to said loudspeaker system to provide a modified signal corrected for the inherent nonflat frequency response of said loudspeaker system and for acoustic effects of the environment in which said loudspeaker system is disposed, said equalizing system comprising:

input terminal means for receiving said input electrical signal;

output terminal means for coupling the output of said equalizing system to said loudspeaker system;

detection means for detecting the acoustic output of said loudspeaker system generated in response to an input electrical signal applied to said input terminal means of said equalizing system and for generating a first electrical signal representative of said acoustic output of said loudspeaker system and as a function of said nonflat frequency response of said loudspeaker system and the acoustic effects of said environment;

first means for determining the signal energy content of each of a plurality of frequency bands within a predetermined frequency range of said first electrical signal;

second means for determining the signal energy content of each of a like plurality of like frequency bands within a like frequency range of the input electrical signal;

means for comparing the signal energy content of each of said frequency bands of said first electrical signal with the corresponding energy content of the respective like frequency band of said input electrical signal and for generating a correction signal in response to each such comparison; and

modification means coupled between said input and output terminal means, and responsive to said correction signals for modifying said input electrical signal within each of the corresponding frequency bands thereof so as to produce said modified signal.

4,316,061

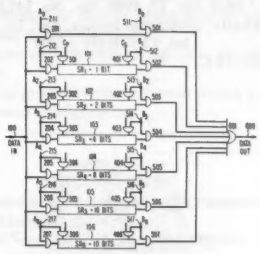
MINIMAL DELAY RATE-CHANGE CIRCUITS

Syed V. Ahamed, 743 Davis Rd., Gillette, N.J. 07933

Filed Nov. 23, 1979, Ser. No. 96,690

Int. Cl.³ H04B *1/66*

U.S. Cl. 179—15.55 T **11 Claims**



1. Circuitry for transforming an input signal partitioned into blocks of samples to a rate-changed output signal

CHARACTERIZED BY

means for sequentially storing a plurality of said samples in locations arranged in parallel between said input and said output and having lengths proportional to a geometric progression, and

means for sequentially gating the contents of said locations during predetermined time intervals to said output.

4,316,062

ELECTROSTATIC ELECTROACOUSTIC TRANSDUCER

Harold N. Beveridge, 505 E. Montecito St., Santa Barbara, Calif. 93103

Filed Dec. 28, 1979, Ser. No. 108,065

Int. Cl.³ H04R *19/00, 31/00*

U.S. Cl. 179—111 R **22 Claims**

1. An electrostatic electroacoustic transducer including

electrode portions and frame portions, at least one of said frame portions comprising:

a length of metal having at least one face thereon and having a plurality of channels cut into said face;

said length of metal being bent to surround one of said electrode portions; and,

said channels being adjacent said one electrode portion and adapted to engage an adhesive material for affixing said frame-portion to said one electrode portion.

9. A method of fabricating an electrostatic electroacoustic transducer of the type which includes electrode portions and frame portions, said method comprising the steps of:

forming said frame portion from a length of metal;

locating a plurality of channels in a face of said frame portion;

bending said frame portion to surround one of said electrode portions;

placing an adhesive-filler material between said frame portion and said electrode portion so that said adhesive-filler extends into said channels; and

permitting said adhesive-filler material to cure to form a frame-electrode assembly.

4,316,063

SWITCH OPERATING DEVICE

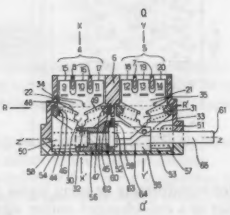
Christian Starck, Angouleme, France, assignor to La Telemecanique Electrique, France

Filed Apr. 17, 1980, Ser. No. 141,089

Claims priority, application France, Apr. 18, 1979, 79 10573

Int. Cl.³ H01H *15/00*

U.S. Cl. 200—16 C **4 Claims**



1. A switch operating device comprising:

(i) a housing including:

(a) a cover portion having first and second parallel switching chambers placed side by side

(b) a base portion having first and second further chambers

(ii) first and second contact carriers movable in a first direction within the respective first and second switching chambers, and first and second pusher members integrally mounted on the first and second contact carriers and extending into the base portion, respectively

(iii) first and second frames respectively surrounding the first and second pusher members within the base portion and movable in said first direction

(iv) first and second resilient means respectively connecting the first and second pusher members to the first and second frames, said first and second resilient means respectively creating a dead center point for the first and second frames, respectively;

(v) first and second slides movable in a second direction at right angles with the said first direction within said first and second further chambers, each of said slides having first actuating ramps which cooperate with the respective pusher member and second actuating ramps cooperating with the respective frame;

(vi) first and second further resilient means respectively mounted in the first and second further chambers for normally urging the respective first and second slides one towards the other along said second direction, and

(vii) an elongated control member respectively movable within the base portion along the said second direction, said control member having means for driving the first and second slides in opposite senses away from each other, said control members having an extension located outside the housing.

4,316,064

REMOTE OPERATION DEVICE

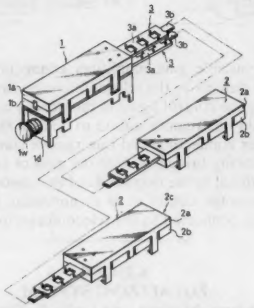
Hitoshi Fujino, Furukawa, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed May 30, 1980, Ser. No. 155,145

Claims priority, application Japan, May 31, 1979, 54/73646

Int. Cl.³ H01H *3/00, 15/00*

U.S. Cl. 200—17 R **3 Claims**



1. A remote operation device for interconnecting a plurality of remote electric components operated by slide elements with a single actuator for operating each of said remote electric components upon operation of said actuator, including a plurality of resilient interconnection members each adapted to engage a respective one of said remote electric components and including a sleeve member slidably receiving a slide member, said sleeve members each including means on one end portion for attaching it to the slide element of a respective electric component and means at its other end portion for attaching it to said actuator, whereby each of said electric components may be widely spaced and yet operated simultaneously by operation of said actuator.

4,316,065

PLUNGER SWITCH

Gerhard H. Rupp, and Hans F. Schneider, both of Radolfzell, Fed. Rep. of Germany, assignors to TRW Inc., Cleveland, Ohio

Filed Nov. 9, 1979, Ser. No. 92,882

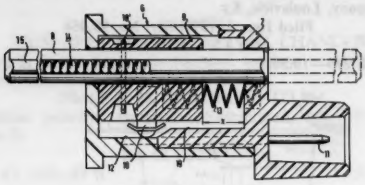
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1978, 2848875

Int. Cl.³ H01H *3/14*

U.S. Cl. 200—61.89 **10 Claims**

1. A plunger switch which is particularly adaptable for use as an automotive vehicle brake light switch comprising a switch housing, a plunger partially disposed both inside and outside the housing, said plunger carrying one of a pawl and a ratchet, electrical terminals mounted in the housing, a movable element mounted on the plunger, said movable element carrying one of a pawl and a ratchet, and a switch contact part mounted on the movable element and engageable with the terminals, said pawl and ratchet being in engagement with one another to couple the movable element to the plunger so that

the element travels reciprocally and linearly relative to the housing responsive to depression and release of the plunger



and the plunger is linearly adjustable relative to and independently of any movement of the movable element.

4,316,066

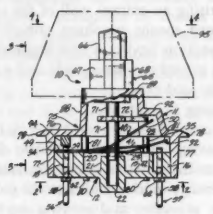
KEY SWITCH WITH SNAP-ACTION CONTACT AND RESILIENT ACTUATOR

Michael Muller, Newport Beach; Reed A. Palmer, Irvine, and Harry R. Marker, Costa Mesa, all of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 73,994, Sep. 10, 1979, abandoned. This application Nov. 28, 1980, Ser. No. 211,428

Int. Cl.³ H01H *5/20, 13/38*

U.S. Cl. 200—670 **22 Claims**



1. A key switch comprising:

a housing;

first and second terminals secured to the housing, the first terminal having a portion defining a fixed switch contact;

a bi-stable snap-action conductive spring secured to the housing and in electrical connection with the second terminal, said snap-action spring being movable between first and second bi-stable positions and having a portion defining a movable switch contact positioned above and normally out of engagement with the fixed contact in said first position;

an actuator spring secured at one end to the housing and having a free end and an intermediate portion located between said one end and said free end, said intermediate portion being disposed above said snap-action spring, said free end being movable downwardly to urge said intermediate portion against the snap-action spring;

a keystem slidably mounted on the housing above said springs and having a portion positioned to bear on the free end of the actuator spring, downward depression of said keystem causing an actuating force to be applied through said intermediate portion of the actuator spring to the snap-action spring to bring said movable switch contact into engagement with said fixed switch contact, the direction of the actuating force being generally parallel to the direction of keystem motion; and

said snap-action spring returning by its inherent resilience to said first position when the downward pressure on said keystem is released.

12. A key switch comprising:

a housing including a base and a cover;

a fixed switch contact on said base;

a bi-stable snap-action conductive spring secured to the housing, said snap-action spring being movable between first and second bi-stable positions and having a portion defining a movable switch contact positioned above and normally out of engagement with the fixed contact in said first position;

an actuator spring secured at one end to the housing and having a free end and a second portion, said second portion being closer to said one end than is said free end, said second portion being disposed above said snap-action spring, said free end being movable downwardly to urge said second portion against the snap-action spring;

a keystem slidably mounted on the housing above said springs and having a portion positioned to bear on the free end of said actuator spring, downward depression of said keystem causing an actuating force to be applied through said second portion of the actuator spring to the snap-action spring to bring said movable switch contact into engagement with said fixed switch contact, the direction of the actuating force being generally parallel to the direction of keystem motion;

said snap-action spring returning by its inherent resilience to said first position when the downward pressure on said keystem is released;

said snap-action spring being a generally rectangular sheet of spring metal having a pair of parallel sides and two generally parallel ends;

said sheet being bowed between said sides to provide an upraised intermediate section engageable by said second portion of said actuator spring;

said intermediate section embodying said movable switch contact; and

said ends having grooves formed therein stressing said sheet into said bowed configuration.

4,316,067

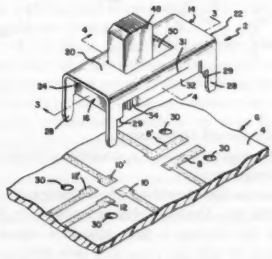
SLIDE SWITCH

Robert N. Whiteman, Jr., Middletown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 31, 1980, Ser. No. 135,815

Int. Cl.³ H01H *9/00, 15/00*

U.S. Cl. 200—291 **11 Claims**



1. A slide switch which is intended for mounting on a circuit board having first and second terminal pads on one surface thereof, said switch comprising:

a switch housing and a slide member, said housing being generally channel-shaped and having a web, sidewalls and means for mounting said housing on said one surface with edge portions of said sidewalls against said one surface and with said web spaced from said one surface,

said slide member comprising a block of insulating material slideably contained between said sidewalls for movement parallel to the axis of said housing, said slide member having inwardly and outwardly directed major surfaces, said inwardly directed major surface being opposed to the

internal surface of said web, said outwardly directed major surface facing outwardly from said housing,

a contact member mounted on said outwardly directed major surface, said contact member having spaced-apart contact portions and a connecting strip extending between said contact portions, said contact portions being spaced outwardly from said outwardly directed major surface and located proximate to the ends of said slide member,

spring means effective between said contact member and said outwardly directed major surface, said spring means serving to bias said contact portions outwardly from said outwardly directed major surface while permitting movement of said contact portions towards said outwardly directed major surface and

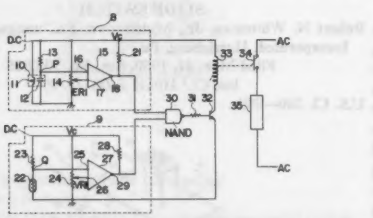
interengaging means effective between said housing and said slide member serving to retain said slide member in said housing, said interengaging means permitting sliding movmement of said slide member relative to said housing whereby, upon mounting said switch on said circuit board in covering relationship to said terminal pads, said spring means will bias said contact portions against said one surface of said circuit board, and said slide member can be moved between first and second positions in which said contact portions are against both of said terminal pads and are not against both of said terminal pads respectively.

4,316,068

COOKING UTENSIL CONTROLLED BY GAS SENSOR OUTPUT AND THERMISTOR OUTPUT

Takeshi Tanabe, Higashiosaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 17, 1980, Ser. No. 113,073
Claims priority, application Japan, Jan. 25, 1979, 54-7729
Int. Cl.[3] H05B *6/68, 1/02*
U.S. Cl. 219—10.55 B **5 Claims**



1. A cooking utensil comprising:

heat generating source means for cooking a foodstuff disposed in the cooking utensil;

gas sensor means for detecting the concentration of a gas emitted from the foodstuff being cooked in the cooking utensil and developing a first detection signal when the concentration of said gas exceeds a first reference level;

temperature sensor means for detecting the temperature of the foodstuff being cooked in the cooking utensil and developing a second detection signal when the temperature of the foodstuff exceeds a second reference level; and

a control circuit for controlling the operation of said heat generating source means, said control circuit comprising:

determination means responsive to the first and second detection signals for developing a control signal when both said gas sensor means and said temperature sensor means develop said first and second detection signals, respectively; and

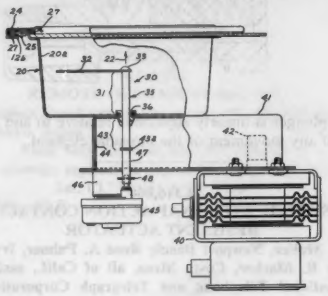
driver means responsive to said control signal for terminating the operation of said heat generating source means in response thereto.

4,316,069

MICROWAVE OVEN EXCITATION SYSTEM

Louis H. Fitzmayer, Lousville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 3, 1979, Ser. No. 99,454
Int. Cl.[3] H05B *6/72*
U.S. Cl. 219—10.55 F **16 Claims**



1. A microwave oven excitation system for an oven cavity having top, bottom and side walls, the system comprising:

a waveguide section adapted to be in microwave energy communication with the oven cavity through one of said walls comprising an entrant wall of the oven cavity;

movable antenna means mounted completely within the waveguide section having a first segment parallel to the propagation axis of the waveguide and a second segment orthogonal to said axis;

means for moving the antenna;

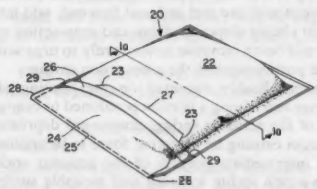
and means for coupling microwave energy to the antenna to excite a moving asymmetric electric field within the waveguide as the antenna is moved, said field having a substantial energy mode parallel to the entrant wall of the oven cavity, whereby said moving asymmetric electric field is coupled through said entrant wall to excite within the oven cavity a time varying electric field pattern of desirable average uniformity during a cooking cycle.

4,316,070

COOKWARE WITH LIQUID MICROWAVE ENERGY MODERATOR

Robert L. Prosise; Algis S. Leveckis, and Charles L. Gunn, all c/o Ivorydale Tech. Center, Cincinnati, Ohio 45217

Filed Aug. 21, 1979, Ser. No. 68,357
Int. Cl.[3] H05B *6/80*
U.S. Cl. 219—10.55 E **47 Claims**



1. Cookware for cooking foods evenly in a microwave oven comprising a vented enclosure transmissive of microwave energy, being microwave oven compatible up to at least 150° C., said enclosure having an inner layer of liquid of from 4 to 120 mg./cm.[2], retained by a liquid film forming layer held within said enclosure, said enclosure having an adjusted tech-

nical evenness of greater than zero for 10 minutes and a technical evenness rating above 0.3.

4,316,071

EDM APPARATUS WITH TOOL CHANGER

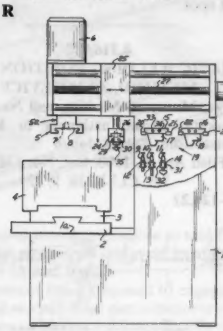
Benno I. Bonga, Crans, Switzerland, assignor to Ateliers des Charmilles S.A., Geneva, Switzerland

Filed Feb. 25, 1980, Ser. No. 123,994

Claims priority, application Switzerland, Mar. 9, 1979, 2277/79

Int. Cl.³ B23P *1/12*

U.S. Cl. 219—69 R **5 Claims**



1. An EDM apparatus for machining by electrical discharges an electrode workpiece by means of a plurality of electrode tools, said apparatus comprising a quill adapted to mount any one of said electrode tools, an electrode tool storage magazine for storing said electrode tools, a tool changer carriage for carrying said electrode tools from said storage magazine to said quill and from said quill back to said storage magazine, and electrode tool holder means on the end of said quill accepting at least two different types of electrode tool supports each in a predetermined position, said electrode tool holder means comprising at least a tapered bore and a plane support surface adapted to co-operate respectively with an electrode tool support having a tapered shank and an electrode tool support having a mounting plate wherein some of the electrode tool supports are one of said different types of supports having a tapered shank and some the other of the electrode tool supports are the other of said different types of supports having a mounting plate, and said electrode tool supports have a portion mating with tool carrying means on said tool changer carriage.

4,316,072

APPARATUS FOR POSITIONING AND SECURING COMPONENTS OF A WORKPIECE

Peter J. Arnoldt, Clairton, Pa., assignor to Ductmate Industries, Inc., Pittsburgh, Pa.

Filed Sep. 17, 1979, Ser. No. 76,207

Int. Cl.³ B23K *11/10, 11/32, 37/04*

U.S. Cl. 219—86.24 **9 Claims**

1. Apparatus for positioning and securing components of a workpiece comprising,

a welding machine frame, said welding machine frame being fixedly positioned,

a welding machine positioned for longitudinal movement on said welding machine frame,

said welding machine including a pair of opposed electrode devices adaptable to apply welding pressure to the workpiece components and transmit welding current to the workpiece components for welding the components together,

means connected to at least one of said pair of electrode devices and said welding machine for moving one of said pair of electrode devices into and out of welding position,

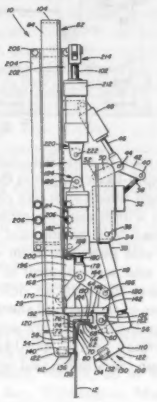
guide means positioned on said welding machine frame for slidably supporting said movable welding machine for longitudinal movement on said welding machine frame into and out of a predetermined position for welding,

clamping means secured to said welding machine frame for engaging a first workpiece component to secure said first workpiece component on said welding machine frame in fixed position relative to the movable welding machine,

said clamping means being movable into and out of engagement with said first workpiece component,

a positioning member fixedly attached to said movable welding machine and being adapted to abut a second workpiece component,

said positioning member being movable with said movable welding machine to move said second workpiece component to a predetermined position relative to said first workpiece component for welding said second workpiece component to said first workpiece component,



actuating means mounted on said frame and operatively connected to said welding machine for advancing said welding machine on said guide means to simultaneously move said welding machine and said positioning member to move said second workpiece component relative to said first workpiece component into said predetermined position for welding said second workpiece component to said first workpiece component,

said pair of electrode devices being movable into welding position after said workpiece components are moved into said predetermined position for welding, and

said positioning member being arranged to move said second workpiece component relative to said first workpiece component to a preselected location on said first workpiece component for welding while said clamping means engaged to said first workpiece component maintains said first workpiece component fixed relative to said movable welding machine and said positioning member.

4,316,073

DOCUMENT RECORDING METHOD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 523,865, Nov. 14, 1974, abandoned. This application Feb. 10, 1978, Ser. No. 831,173

Int. Cl.³ G01D *15/14*

U.S. Cl. 219—121 LL **8 Claims**

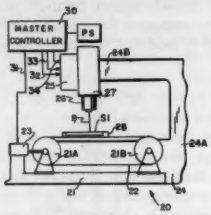
8. A method for producing multiple copies of information comprising the steps of:

generating radiation from a source as a beam of sufficient intensity to pass through and change the physical characteristics of a plurality of record sheets,

multiple axis deflection controlling said beam by pivoting said source about two mutually perpendicular axes to move said beam in two directions so as to define a scan-

ning path at a recording zone which defines the contours of a plurality of selected characters,

predeterminately interrupting said beam by pulsing said beam at its source in synchronization with the multiple axis deflection thereof so as to generate and direct pulses of intense radiation against the surface of a first sheet of record material wherein said beam is interrupted and deflection controlled in such a manner that a plurality of such pulses intersect each character location of said sheet and physically change selected spot-like portions of each of said character locations by means of the heat of said pulsed radiation to effect recordings in said first sheet defining an alphanumeric character at each of said loca-



tions wherein each of said character recordings comprises a plurality of spot-like changes in the physical characteristics of said sheet which spot-like changes are predeterminately located within each character recorded, and

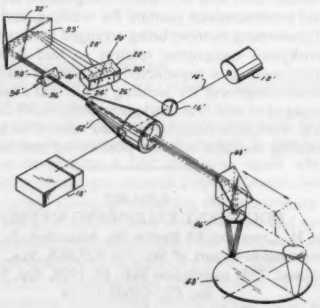
disposing a second sheet behind said first sheet and sequentially passing said pulses of beam radiation through said first sheet to said second sheet at sufficient intensity to effect a plurality of character defining recordings in selected locations of said second sheet which recordings are of substantially the same nature and configurations as the recordings defined by the spot-like changes affected by said pulses beam radiation in said selected locations of said first sheet.

4,316,074

METHOD AND APPARATUS FOR LASER IRRADIATING SEMICONDUCTOR MATERIAL

Richard T. Daly, Huntington, N.Y., assignor to Quantronix Corporation, Smithtown, N.Y.

Filed Dec. 20, 1978, Ser. No. 971,515
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 L **28 Claims**



1. A laser system for treating semi-conductor wafer material, comprising:

a pulsed laser assembly for emitting a beam of sufficient power to treat the semi-conductor material;

a surface upon which at least one semi-conductor target wafer may be placed;

means for directing the beam from said laser assembly to said surface, the directing means including means for permitting the irradiated portions to cool before at least a portion of another beam strikes the same irradiated portion;

means for providing relative rotational movement between said directed beam and said surface in order to irradiate selected portions of the surfaces of the wafers; and

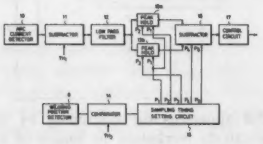
the means for permitting the irradiated portions to cool including means for emitting a plurality of beams in a staggered configuration with respect to one another such that when said means for providing relative movement is actuated, there is sufficient time for an irradiated spot to cool before at least part of another beam strikes the same irradiated spot.

4,316,075

AUTOMATIC WELDING POSITION CONTROL METHOD, AND DEVICE

Toshisuke Isoya; Masayuki Mishiro, and Naohiko Yokoshima, all of Hirakata, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Apr. 8, 1980, Ser. No. 138,292
Int. Cl.³ B23K *9/12*
U.S. Cl. 219—124.22 **4 Claims**



1. An automatic welding position control device comprising:

weaving position detecting means for providing a substantially continuous weaving position signal proportional to the position of a reciprocating welding torch;

arc current detecting means for detecting welding arc current;

means for providing a control pulse when an output level of said weaving position detecting means is larger than a predetermined value;

a sampling timing setting circuit for producing sampling pulses and a subtraction instruction pulse in predetermined time relation to said control pulse;

a pair of holding means for sampling an output of said arc current detecting means in response to said sampling pulses and holding a sampled peak value thereof;

a subtractor for providing a signal proportional to the difference between the outputs of said holding means in response to the subtraction instruction pulse; and

a control circuit for shifting said welding torch to a correct position above the welding line according to said difference.

4,316,076

AUTOMATIC SPEED CONTROL FOR SEAM WELDING

Fredrick J. Balfanz, Waukesha, Wis., assignor to C-R-O, Inc., Menomonee Falls, Wis.

Filed Dec. 31, 1979, Ser. No. 102,521
Int. Cl.³ B23K *9/12*
U.S. Cl. 219—124.34 **8 Claims**

1. In a welding machine for joining first and second metal parts positioned to form a weld groove therebetween and wherein the groove randomly deviates in width from the desired uniform width, the combination comprising:

(a) a machine frame,

(b) a carriage mounted to said frame,

(c) a weld head suspended from said carriage for traversing said groove,

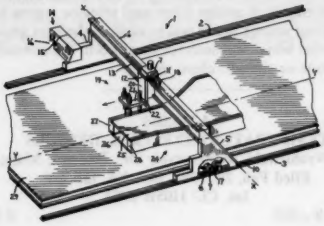
(d) motive means to drive said carriage and weld head at a given speed relative to said groove,

(e) control means suspended from said carriage in advance of said weld head and connected for movement with the latter and responsive to the said random deviations in

groove width to automatically change the drive speed of said motive means in accordance with said deviations,

(f) said control means including first and second sensors engageable separately with each of said first and second metal parts,

(g) said first sensor being disposed to engagingly follow a wall of said groove formed by said first metal part, and with said first sensor being disposed in advance of and connected to said weld head,



(h) position control means responsive to said first sensor for controlling the position of said weld head during traverse of the groove by said head,

(i) said second sensor being disposed to engagingly follow a surface of said second metal part exteriorly of said groove, said second sensor having a portion fixedly connected to a portion of said first sensor,

(j) and speed control means responsive to said second sensor for controlling the drive speed of said motive means.

4,316,077

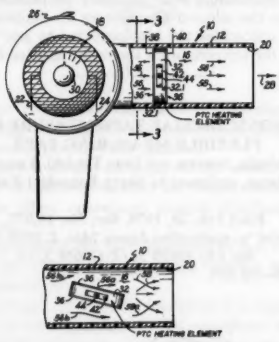
ELASTIC HAIR DRYER HAVING SELECTIVELY VARIABLE AIR OUTPUT TEMPERATURE

Richard H. Carlson, Cumberland, R.I., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 31, 1975, Ser. No. 645,861

Int. Cl.[3] A45D *20/10*; F24H *3/04*; H05B *3/12*

U.S. Cl. 219—370 **2 Claims**



1. A hair dryer comprising housing means defining an air path having an inlet portion and having an outlet portion shaped to commingle air directed along the path, means moving a stream of air along said path to be directed from said dryer through the outlet portion of the path, a heater body of electrical resistance material of positive temperature coefficient of resistivity adapted to be self-heated when electrical current is directed through the body and to display a sharp increase in electrical resistivity when heated to a selected temperature for limiting said self-heating, said body having a plurality of air flow passages extending through the body, means for directing electrical current through the body, and means mounting the body for movement between a first position in the path permitting a selected proportion of the stream of air moving in the path to pass in heat-transfer relation to the body through said body passages to withdraw heat from the body for heating said air and for tending to maintain the resistivity of the body material at a relatively low level to enhance heat output by the body and a second position permitting a relatively lesser proportion of the stream of air moving in the path to pass in heat-transfer relation to the body through the body passages and to commingle in the outlet portion of the path with other air moving along the path outside the body passages for regulating the temperature to which the air is heated while moving along the path and while assuring that any resulting reduction in heat-withdrawal from the body results in increased resistivity of the body material for avoiding overheating of the body, said housing means defining said air path with a portion thereof of selected cross-sectional area and said heater body having a disc-shape with broad opposite side surfaces and having said body passages extending through the body between said opposite surfaces, said body being mounted in said air path portion for movement between said first position wherein said broad surfaces extend normal to the longitudinal axis of the path so that substantially all of the stream of air moving in the air path portion passes in heat-transfer relation to the body through the body passages and said second position wherein said body surfaces extend obliquely relative to the longitudinal axis of the path permitting a relatively less proportion of the stream of air moving in the air path portion to pass in heat-transfer relation to the body through the body passages and permitting other air moving in the air path portion to pass around the heater body and to commingle with the air passed through the body passages.

4,316,078

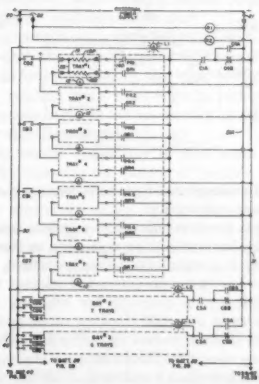
FOOD SERVING SYSTEM

Anthony C. Mack, North Reading; Robert A. Phillips, Wayland, and George K. Shumrak, Natick, all of Mass., assignors to Sweetheart Plastics, Inc., Wilmington, Mass.

Continuation-in-part of Ser. No. 868,072, Jan. 9, 1978, abandoned. This application Dec. 26, 1979, Ser. No. 106,460

Int. Cl.[3] H05B *1/02*

U.S. Cl. 219—386 **22 Claims**



1. A mobile food serving system for rethermalizing food and maintaining food temperature after rethermalization, said system comprising;

mobile housing means having at least one tray supporting rack,

an electrical energy source carried by and movable with the housing means,

a tray removably supported on the rack and having a supporting surface for food containers,

at least one food heater associated with the supporting sur-

face and in thermal contact with a surface of the tray for good heat transfer thereto,

selectable means in series with said heater for enabling coupling of energy source power to the heater,

and control means coupled from the energy source for controlling food heating and temperature,

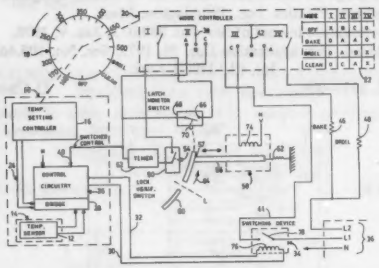
said control means including manual mode control switch means having opposite mutually-exclusive single positions including a normal position associated with a normal heating period of the food, and a rethermalization position associated with a rethermalization period, means responsive to the normal operation position for coupling operating power to the food heater at a continuous rate with the switch means set at and maintained at said single normal position throughout said normal operation position, and first means responsive to the rethermalization position and including first timing means for coupling operating power to the food at a continuous rate for a predetermined interval of sufficient length to rethermalize the food at a first temperature range and second means responsive to termination of the predetermined interval for thereafter operating the heater at a lower power level to maintain the food heated to a second temperature range lower than the first temperature range, said switch means being set at and maintained at said single rethermalization position throughout both portions of said rethermalization period.

4,316,079

CONTROL ARRANGEMENT FOR SELF-CLEANING OVEN

Charles J. Schmitz, Rolling Meadows, Ill., assignor to Harper-Wyman Company, Hinsdale, Ill.

Filed Jan. 21, 1980, Ser. No. 113,733
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—413 **14 Claims**



1. A control arrangement for a self-cleaning oven, said control arrangement comprising:

control means for controlling the selective operation of an oven cavity heat generating apparatus, said control means comprising a temperature sensing element arranged to sense oven cavity temperatures and selector means manually settable by an operator for selecting oven cavity temperatures in a normal cooking mode and a self-clean mode, said selector means further comprising means for determining operational oven modes including at least one normal cooking mode, a self-clean mode and an oven door unlock mode, said control means further comprising electrical circuit means responsive to said temperature sensing element and said selector means for outputting a control signal having a first output state when said sensed oven cavity temperature is below the temperature selected by said selector means and a second output state when said sensed temperature is above the temperature selected by said selector means, said control means further comprising means responsive to said selector means for providing a temperature set point input to said electrical circuit means;

lock means including a lock control input for selectively locking a door latching arrangement in the closed position of an oven door when the oven door is closed and the door latching arrangement is operated; and

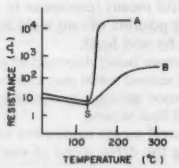
lock and temperature mode means responsive to said control signal of said electrical circuit means and connected to said lock control input of said lock means and to the heat generating apparatus for controlling said lock means and the heat generating apparatus in accordance with said sensed temperature, said lock and temperature mode means also being responsive to said selector means to control said lock means when said selector means is in the oven door unlock mode and to control the heat generating apparatus when said selector means is in the normal cooking mode or the self-clean mode.

4,316,080

TEMPERATURE CONTROL DEVICES

Theodore Wroblewski, 46 Reservoir Dr., Danvers, Mass. 01923

Filed Feb. 29, 1980, Ser. No. 125,799
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—505 **8 Claims**



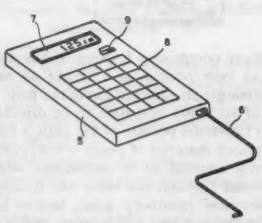
1. An automatic temperature control circuit adapted to connect to a source of electrical current, said circuit comprising a resistive heating element and a thermistor having a positive temperature coefficient shunting at least a portion of said heating element, said thermistor further being characterized as having a base resistance below a selected temperature and a relatively low proportional rate of increase of resistance with increasing temperature over the entire temperature operating range above the selected temperature for automatically proportionally controlling the heat provided by said heating element when the temperature is above the selected temperature.

4,316,081

ELECTRONIC DIGITAL TAPE MEASURE HAVING FLEXIBLE MEASURING TAPE

Isamu Washizuka, Soraku, and Iwao Tateishi, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 28, 1979, Ser. No. 16,077
Claims priority, application Japan, Mar. 2, 1978, 53-27156[U]
Int. Cl.³ G01B *3/12*; G06M *3/14*
U.S. Cl. 235—92 DN **7 Claims**



1. An electronic digital tape measure comprising:

an extensible and flexible tape including,

a plurality of discrete magnetic members, and

a plurality of discrete nonmagnetic members alternately disposed between said magnetic members, said nonmagnetic members spacing said magnetic members at predetermined intervals from each other;

detector means for sensing the presence of each of said magnetic members which pass said detector means as said tape is extended and for generating a signal in response thereto; and

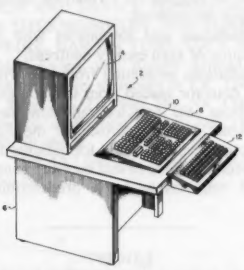
counter means responsive to the signal generated by said detector means for accumulating a count representative of the number of magnetic members sensed by said detector, said count being representative of the length of said tape.

4,316,082

COMPUTER CONTROL APPARATUS

John R. Fritz, Phoenix, Ariz., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 6, 1980, Ser. No. 119,125
Int. Cl.³ G06C *7/02*
U.S. Cl. 235—146 **4 Claims**



1. A computer interface control console arranged to interface with a digital computer, said console comprising:

a base member having a top member,

an operator's keyboard mounted on the surface of said top member of said base member for connection to said computer to effect operational control interface with said computer,

an engineer's keyboard for connection to said computer to enable the making of engineering changes in said computer operation,

mounting means for movably mounting said engineer's keyboard on said top member for movement between an operational position in front of said top member and a retracted stored position at the underside of said top member,

said mounting means including

a mounting bracket secured to the underside of said top member,

a pair of support guide members secured to said mounting bracket,

said engineer's keyboard includes a pair of cantilever support arms extending therefrom, and

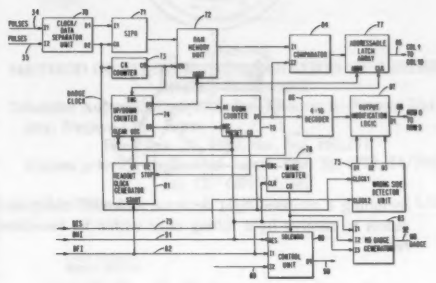
guide means carried by said support arms in engagement with said guide members on said mounting bracket for movably supporting said engineer's keyboard through said two positions.

4,316,083

LOGIC CONTROL SYSTEM FOR A BISTABLE MAGNETIC WIRE BADGE READING SYSTEM

Richard G. Harris, Franklin, and Neil W. Harman, Marlboro, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Aug. 5, 1980, Ser. No. 175,462
Int. Cl.³ G06K *7/08, 19/08*
U.S. Cl. 235—449 **3 Claims**



1. A logic control system for a bistable magnetic wire badge reading system in electrical communication with a local controller, said badge reading system including sensor means for detecting the progress of a badge along an insertion path of a badge receiving means internal to said reading system, bistable magnetic wire detector means for sensing bistable magnetic wire logic patterns in said badge and generating binary coded information streams representative of said logic patterns, said logic control system which comprises:

(a) pulse discrimination means receiving said information streams from said bistable magnetic wire detector means for forming therefrom a data pulse stream and a logic control pulse stream;

(b) data formatting means responsive to said logic control pulse stream for reforming said data pulse stream into a two-dimensional data matrix row and column format for processing by said local controller;

(c) badge orientation detection means in electrical communication with said pulse discrimination means and said sensor means for interrogating said logic control pulse stream in time relation with logic signals received from said sensor means to signal the occurrence of data error conditions to said local controller; and

(d) counter means responsive to said logic control pulse stream for counting the number of bistable magnetic wire logic patterns detected by said bistable magnetic wire detector means in passing through registration with said badge and issuing a logic equivalence signal upon the occurrence of a predetermined count to indicate the presence of a valid badge to said local controller.

4,316,084

LIGHT TRACKING DETECTORS AND HOUSING THEREFOR

Alton H. Stout, 9730 S. Sheridan Rd., Fenwick, Mich. 48834

Filed Dec. 17, 1979, Ser. No. 104,268
Int. Cl.³ G01J *1/20*
U.S. Cl. 250—203 R **14 Claims**

1. A sensor for a light tracking device comprising:

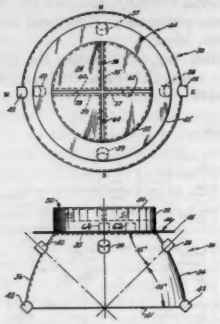
a mounting base;

a plurality of light detectors mounted to said base in spaced relationship to one another;

shade means mounted to said base for shading light directed toward said detectors; and

target means positioned on said base between said light detectors, said target means including a pair of elongated

recesses formed downwardly therein and extending in orthogonal relationship to one another, said target means



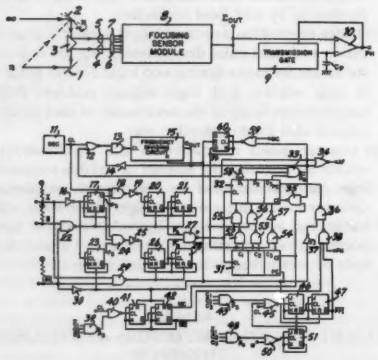
including a recessed light detector mounted under each recess to receive light falling only within its associated recess.

4,316,085

AUTOMATIC FOCUSING ADJUSTOR DEVICE

Takeo Saito; Hiroaki Ishida; Takashi Segawa; Shinji Nagaoka, and Yuzuru Takazawa, all of Shikawatashi, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed May 16, 1980, Ser. No. 150,666
Claims priority, application Japan, May 17, 1979, 54-60819
Int. Cl.[3] G03B *13/20*
U.S. Cl. 250—204 **8 Claims**



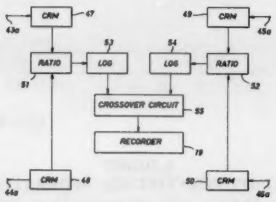
1. An automatic focusing adjustor device comprising: a focus sensor device having a fixed mirror and a movable mirror in which optical images reflected from each of the mirrors are photoelectrically compared with each other to generate a focusing sensor signal corresponding to the distance to an object to be photographed; and adjusting means responsive to a condition when said focusing sensor signal is not obtained and responsive to a brightness signal representative of an object to be photographed for performing distance adjustment in two steps.

4,316,086

METHOD AND APPARATUS FOR MEASURING NEUTRON CHARACTERISTICS OF MATERIAL SURROUNDING A BOREHOLE

Eric C. Hopkinson, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jul. 28, 1980, Ser. No. 172,605
Int. Cl.[3] G01V *5/00*
U.S. Cl. 250—262 **19 Claims**



1. A method for logging the formations surrounding a borehole, comprising the steps of:

pulsedly irradiating said formations with discrete bursts from a source of high energy neutrons;

detecting radiations emanating from said irradiated formations at a detector spaced from said source;

generating from said detected radiations first and second measurements of the macroscopic thermal neutron absorption cross-section of said formations; and

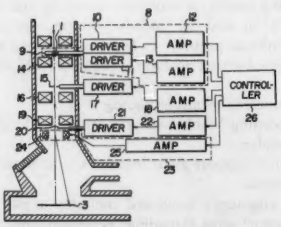
selectively recording one of said measurements based upon a functional relationship to a predetermined reference value.

4,316,087

METHOD OF PHOTOGRAPHING ELECTRON MICROSCOPE IMAGES ON A SINGLE PHOTOGRAPHIC PLATE AND APPARATUS THEREFOR

Takashi Yanaka, Hino, and Kohei Shirota, Akikawa, both of Japan, assignors to International Precision Incorporated, Hachiohji, Japan

Filed Oct. 30, 1979, Ser. No. 89,371
Claims priority, application Japan, Nov. 1, 1978, 53-133774
Int. Cl.[3] G01N *23/00*
U.S. Cl. 250—307 **9 Claims**



1. A method of photographing electron microscope images of different portions of a specimen included in the view of the observation, one after another, on corresponding portions of a

single photographic plate, which method comprises the steps of:

selecting a portion of said specimen as a section of observation, and obtaining only the electron beam which emerges from said selected portion of the specimen;

applying the electron beam emerging from the selected portion of said specimen to an intermediate lens and a projector lens, on or near the axis thereof;

selecting a portion of the photographic plate as a sectional position of exposure which corresponds to the position relative to the view of the observation where said selected portion of the specimen should be imaged, and deflecting the electron beam passed through the intermediate lens and projector lens at a position between the projector lens and the photographic plate to said selected portion of the photographic plate;

exposing the electron beam emerging from said selected portion of said specimen to said selected portion of the photographic plate; and

repeating the above steps by selecting other portions of the specimen different from said portion, one after another, applying the electron beam emerging from a selected other portion of said specimen to the intermediate lens and the projector lens, deflecting the electron beam passed through the intermediate lens and the projector lens at the position between the projector lens and the photographic plate to another selected portion of the same photographic plate as that used in the former exposing step, and exposing the deflected electron beam.

4,316,088

PROCESS AND DEVICE FOR MEASURING BY INFRARED THERMOMETRY THE TEMPERATURE OF A WIRE, BAR OR TUBE, OR A METAL

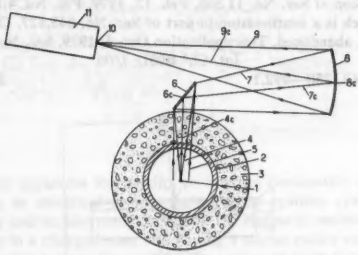
Robert Corbier, Lyons, and Robert Arnaud, La Celle Saint Cloud, both of France, assignors to I.R. Tec, France

Filed Jan. 22, 1980, Ser. No. 114,282

Claims priority, application France, Jan. 23, 1979, 79 01664; Jan. 11, 1980, 80 00646

Int. Cl.³ G01J *1/00*; G01N *23/00*

U.S. Cl. 250—338 **20 Claims**



1. A device for measuring, by infrared thermometry, the temperature of a body having in at least one direction a small dimension, said device comprising:

black body cavity means having an aperture formed therein to permit the escape of infrared radiation to be measured;

infrared measuring means disposed for making a first set of measurements; each measurement of said first set being a measurement of the sum of the total amount of infrared radiation which is incident on a first solid angle and which comes from a portion of the body that is intercepted by said first solid angle and the total amount of infrared radiation which is incident on said first solid angle and which comes from a first portion of the interior wall of said cavity means that is intercepted by said first solid angle; and said infrared measuring means being disposed for making a second set of successive measurements alternating with said first set of measurements, such measurement of said second set being a measurement of the total amount of infrared radiation which is incident in a second solid angle equal to said first solid angle, which radiation comes from a second portion of said interior wall of said cavity means that is intercepted by said second solid angle; and

means for generating an electrical signal representative of the difference between said sum and said total amount of infrared radiation that is incident on said second solid angle.

4,316,089

METHOD OF STABILIZING OPERATION OF A HYBRID SPARK CHAMBER

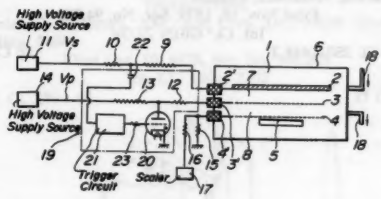
Takahiko Aoyama, Nagoya, Japan, assignor to Nagoya University, Nagoya City, Japan

Filed Jun. 20, 1980, Ser. No. 161,251

Claims priority, application Japan, Jun. 26, 1979, 54/79616

Int. Cl.³ G01T *1/185*

U.S. Cl. 250—385 **2 Claims**



1. A method of stabilizing the operation of a gas-flow type self-triggering hybrid spark chamber having a spark chamber portion and a proportional chamber portion, and in which electrons produced by radiation are multiplied in the proportional chamber portion and generate sparks in the spark chamber portion, said method comprising connecting a high speed discharge circuit to the proportional chamber portion and utilizing the discharge of said circuit to lower the electric field intensity of said proportional chamber portion below a threshold value at the above which it is solely possible for a spark to be induced in said proportional chamber portion by a spark generated in said spark chamber portion, said discharge being initiated in response to each spark generated in said spark chamber portion and before the instant at which a surrounding induced spark in said proportional chamber portion would otherwise occur.

4,316,090

MICROWAVE PLASMA ION SOURCE

Noriyuki Sakudo, Ohme; Katsumi Tokiguchi, Hachioji; Hidemi Koike, Tokorozawa, and Ichiro Kanomata, Fuchu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 30, 1980, Ser. No. 154,824

Claims priority, application Japan, Jun. 4, 1979, 54/68952

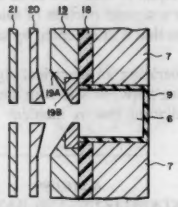
Int. Cl.³ H01J *27/00*

U.S. Cl. 250—423 R **8 Claims**

1. In a microwave plasma ion source having a discharge chamber, means to produce a microwave discharge plasma within said discharge chamber, and an ion extracting electrode system to extract ions from the microwave discharge plasma in said discharge chamber;

said ion extracting electrode system comprising an extractor electrode which lies in contact with said discharge chamber and which has an aperture through which ions are extracted from said discharge chamber, said extractor electrode being divided into a first part which is substantially exposed to the plasma in said discharge chamber and

a remaining second part which is mainly not exposed to the plasma, both said first and second parts being individ-



ual elements of electrically-conductive material in electrical contact with each other.

4,316,091

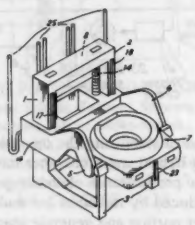
CT SCANNER

Richard T. Bernardi, Prospect Heights, Ill., assignor to EMI Limited, Middlesex, England

Filed Nov. 15, 1979, Ser. No. 94,723

Int. Cl.³ G01N *21/34*

U.S. Cl. 250—445 T **10 Claims**



1. A CT scanner having an aperture housing containing data acquisition components for acquiring data relating to the attenuation suffered by X-radiation on traversing each of many substantially linear paths across a cross-sectional slice of a patient's body, a support structure supporting said housing and moving means for moving said housing relative to said support structure, said moving means disposing said housing with its aperture either generally vertical, to receive a recumbent patient, or generally horizontal, to receive an upright patient.

4,316,092

X-RAY IMAGE CONVERTERS UTILIZING RARE EARTH ADMIXTURES

Jacob G. Rabatin, Chardon, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 6,681, Jan. 26, 1979, abandoned, which is a continuation-in-part of Ser. No. 864,389, Dec. 27, 1977, abandoned, which is a continuation of Ser. No. 749,881, Dec. 13, 1976, abandoned. This application Aug. 25, 1980, Ser. No. 180,845

Int. Cl.³ G01J *1/58*

U.S. Cl. 250—483 **8 Claims**

1. An improved multi-layer x-ray screen construction which comprises:

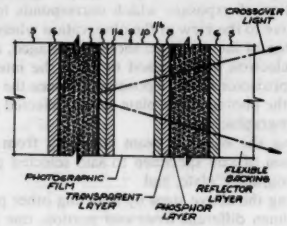
(a) a photographic film having emulsion layers disposed on each major surface and separated by an optically transparent support,

(b) a pair of phosphor layers being positioned on each side of said photographic film to form a sandwich configuration, and

(c) each of said phosphor layers comprising an admixture of polyhedral terbium activated gadolinium oxysulfide phosphor crystals having an average particle size in the range of approximately 6 to about 20 microns

in combination with plate-like crystals having an average particle size in the range from approximately 2 to about 12 microns having the general formula:

$$LnOX:Tm^{3+}$$



wherein

Ln is one or more of La and Gd,

X is one or more of Cl and Br, and

Tm is present as an activator ion from about 0.05 to about 1 mole percent,

said phosphor admixture exhibiting improved resolution capability and reduced crossover problem.

4,316,093

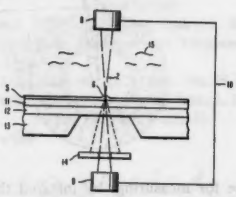
SUB-100A RANGE LINE WIDTH PATTERN FABRICATION

Alec N. Broers, Purdys Station; Jerome J. Cuomo, Lincolndale; Robert B. Laibowitz, Peekskill, and Walter W. Molzen, Jr., Patterson, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 11,360, Feb. 12, 1979, Pat. No. 4,197,332, which is a continuation-in-part of Ser. No. 845,527, Oct. 26, 1977, abandoned. This application Oct. 4, 1979, Ser. No. 81,760

Int. Cl.³ B05D *3/06*

U.S. Cl. 250—492.1 **3 Claims**



1. Apparatus for forming patterns comprising in combination:

an electron backscattering control support having an electron backscattering control workpiece supporting substrate thereon,

a controllable beam source of electrons focused on said substrate,

electron beam monitoring means operable to sense a change in quantity of electrons passing through said substrate,

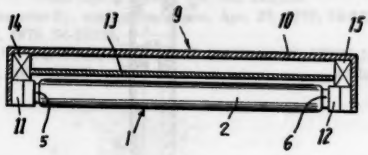
communication means responsive to said monitor means and operable to control said beam source; and aperture means operable to shield said electron beam monitoring means from electrons deflected by a forming resist.

4,316,094

SUNLAMP AND SOURCE OF ULTRAVIOLET RADIATION THEREFOR

Friedrich Wolff, Lindenring 17, D-6000 Frankfurt am Main 50, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 958,613, Nov. 8, 1978, Pat. No. 4,194,125. This application Mar. 19, 1979, Ser. No. 21,910
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1978, 2844967
The portion of the term of this patent subsequent to Mar. 18, 1997, has been disclaimed.
Int. Cl.³ G01J 1/00
U.S. Cl. 250—504 R 10 Claims



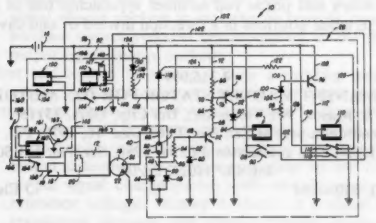
1. A source of ultraviolet light, particularly in the UVA region, comprising a hollow elongated tubular body having first and second end portions; a plug at each of said end portions, the combined length of said tubular body and said plugs being between 1770 and 1850 mm; and electric contact means extending from each of said plugs.

4,316,095

ENGINE STARTING APPARATUS

Perry D. Laffoon, 21 Janice, Yukon, Okla. 73099, and John A. Shannon, 525 N. Peniel, Oklahoma City, Okla. 73108

Filed Aug. 27, 1979, Ser. No. 69,799
Int. Cl.³ H02J 3/00
U.S. Cl. 290—38 R 6 Claims



1. An apparatus for starting an internal combustion engine having an electrical system including an ignition system, a battery and an alternator driven by the engine to maintain the battery in a charged state and having a starter motor connectable to the battery for starting the engine at such times that electrical power is supplied to the ignition system of the engine, comprising:

a receptacle for receiving an electrical load, said receptacle having a first terminal connected to the output terminal of the alternator and a second terminal connected to an alternator ground;

means for providing a unidirectional conducting path from one terminal of the battery to the first terminal of the receptacle, the conduction direction of said path opposing an electrical current from the output terminal of the alternator to the battery, and the other terminal of the battery being connected to the alternator ground;

a switching circuit having a portion interposed between the second terminal of the receptacle and the alternator ground, whereby an electrical load connected between the terminals of the receptacle will complete an electrical circuit with the battery via the means for providing a unidirectional current path, comprising:

at least one switching relay, each switching relay having at least one set of normally open contacts; and

means for actuating the swiching relays to close the normally open contacts thereof in response to a current through an electrical load connected between the terminals of the receptacle;

means connected to one set of normally open contacts of one of the switching relays, for connecting the ignition system to the battery so as to enable the engine to operate in a closed condition of said one set of normally open contacts; and

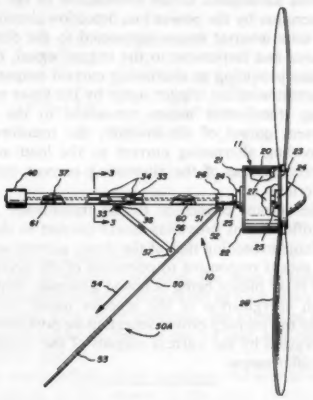
means connected to one other set of normally open contacts of a switching relay for connecting the starter motor to the battery so as to operate the starter motor in response to closure of said one other set of normally open contacts at such time that the engine is in a non-operating condition.

4,316,096

WIND POWER GENERATOR AND CONTROL THEREFORE

Charles D. Syverson, 2007 Roe Crest Dr., North Mankato, Minn. 56001

Filed Oct. 10, 1978, Ser. No. 950,009
Int. Cl.³ F03D 7/02
U.S. Cl. 290—44 27 Claims

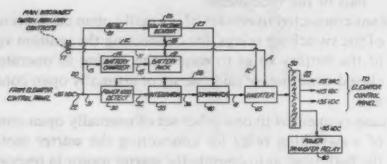


1. A wind powered generating system for producing electric power comprising a generator assembly having a rotatable portion and producing an electrical output, means to mount said generator assembly about a generally vertical rotational axis, means to provide wind powered rotation of said rotatable portion of said generator assembly, and a tail control assembly mounted to said generator assembly including a frame and a wind oriented vane adjustably mounted relative to said frame for changing the orientation of the axis of rotation of the rotatable portion relative to the wind direction comprising means to pivotally mount said vane relative to said frame generally about an upright axis, and means between said frame and vane to control the angle of said vane about said upright axis relative to said frame comprising a motor mounted on said frame, a link coupled to said vane at location spaced from the upright axis, drive means coupling said motor to said link to control said link to cause the vane to pivot about the upright axis and means to selectively power said motor as a function of a measured condition including means to connect the motor to be powered by said electrical output.

4,316,097
BACKUP POWER CIRCUIT

William R. Reynolds, c/o Electronic Systems & Components, Inc., 110 Summit Ave., Chatham, N.J. 07928

Filed Dec. 14, 1979, Ser. No. 103,735
Int. Cl.[3] B66B *5/02*
U.S. Cl. 307—66 9 Claims



1. A backup power circuit for automatically energizing a multi-power requirement load upon failure of its primary power source comprising:

a direct current source;

a power loss detection circuit connected to monitor a power parameter of the load, a predetermined change in the power parameter from its normal condition causing the power loss detecting circuit to generate a fault signal;

solid state timer means responsive to the fault signal, the timer means providing a trigger signal a predetermined time period after the generation of the fault signal, the triggering signal continuing for a predetermined time period subsequent to the termination of the fault signal generation by the power loss detection circuit;

solid state inverter means connected to the direct current source and responsive to the trigger signal, the inverter means providing an alternating current output during the generation of the trigger signal by the timer means;

step-up transformer means connected to the alternating current output of the inverter, the transformer means providing alternating current to the load at a voltage exceeding that of the alternating current output of the inverter;

rectifier means connected to the transformer means, the rectifier means providing direct current to the load at a voltage exceeding that of the direct current source; and

relay means responsive to operation of the inverter means, the relay means being actuated generally simuitaneously with energization of the inverter means to disconnect from the primary power source those portions of the load energized by the current outputs of the transformer and rectifier means.

4,316,098
GAS SPRING ARRANGEMENT OPERATING AS AN ELECTRICAL CONNECTION

Herbert Freitag, Koblenz-Metternich, and Klaus Schnitzius, Rheinbrohl, both of Fed. Rep. of Germany, assignors to Stabilus GmbH, Koblenz-Neuendorf, Fed. Rep. of Germany

Filed Oct. 17, 1978, Ser. No. 952,092
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1977, 2748376
Int. Cl.[3] H01H *3/16*
U.S. Cl. 307—119 21 Claims

1. In a gas spring arrangement through which an electrically conductive current path is provided, comprising:

(a) a cylinder member having an axis and being formed with a cavity, said cylinder member including an annular end wall transverse to said axis;

(b) a body of gas under superatmospheric pressure in said cavity:

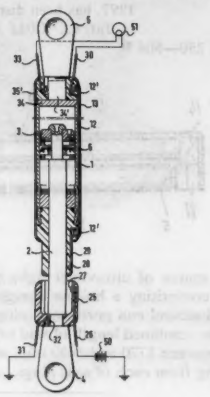
(c) a piston rod member axially movable inward and outward of said cavity in sealing engagement with said end wall between two terminal positions;

(d) fastening means attached to respective, axially spaced portions of said members outside said cavity for fastening said members to respective objects;

(e) a first electrically conductive terminal on said cylinder member accessible from outside said cavity;

(f) a second, electrically conductive terminal on said piston rod member accessible from outside said cavity; and

(g) conductive means connecting said terminals during a portion of the movement of said piston rod member between said positions, said conductive means including:



(1) a first contact element on said cylinder member adjacent said end wall and outside said cavity of said cylinder, and

(2) a second contact element on an axially terminal portion of said piston rod member which does not enter said cavity of said cylinder, said second element engaging said first element outside of said cavity of said cylinder when said piston rod member approaches one of said terminal positions in a direction inward of said cavity.

4,316,099
PERMANENT MAGNET STATOR FOR D.C. MOTORS

Elmer B. Mason, 901 Vickie Dr., Del City, Okla. 73115

Continuation-in-part of Ser. No. 2,262, Jan. 10, 1979, Pat. No. 4,221,984. This application Jul. 21, 1980, Ser. No. 171,502
Int. Cl.[3] H02K *23/04*
U.S. Cl. 310—154 3 Claims

1. A motor assembly, comprising:

magnetic motor support means including a pair of nonmagnetic spaced-apart plates having coaxial bearing equipped central apertures;

at least one rotor journalled by said bearings,

said rotor being characterized by a winding having a plurality of axially extending segments and a commutator having a like plurailty of segments and including a pair of commutator brushes each transversely spanning a plurality of commutator segments; and,

magnetic field producing means including at least one pair of opposing permanent magnets connected with at least one said plate, normal to the plane thereof, and projecting toward the opposite said plate parallel with the rotor axis for establishing a magnetic flux circuit across said rotor,

each said magnet being characterized by a transverse surface facing the winding segments of the rotor,

the transverse dimension of said transverse surface being no greater than the transverse dimension of a plurality of rotor winding segments equal in number to the number of commutator segments spanned by the respective brush.

4,316,100
CHARGE TRANSFER DEVICE WITH OUTPUT DETECTED WITHIN DYNAMIC RANGE

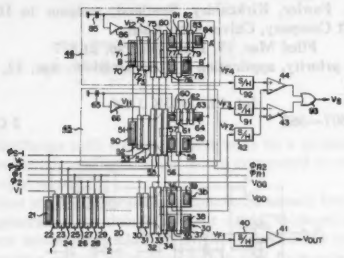
Tatsuo Sakaue, and Tetsuya Iida, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Apr. 23, 1980, Ser. No. 143,130

Claims priority, application Japan, Apr. 27, 1979, 54-52330; Apr. 27, 1979, 54-52338

Int. Cl.³ G11C *19/28;* **H01L** *29/78;* **H03H** *15/02;* **H04N** *5/21*

U.S. Cl. 307—221 D **3 Claims**



1. A charge transfer device comprising:

a charge transfer channel with first and second branched output ports;

first and second output detecting means which are coupled with said first and second output ports and detect output signal charge packets in said charge transfer channel to produce output voltages corresponding to the detected output signal charge packets;

first and second reference voltage generating means for producing first and second reference voltages; and

comparing means coupled with said second output detecting means and said first and second reference voltage generating means for comparing the output voltage of said second output detecting means corresponding to the detected output signal charge packet with said first and second reference voltages thereby to detect if a signal charge transferred through said charge transfer channel falls within a given range or not.

4,316,101
CIRCUIT FOR SWITCHING AND TRANSMITTING ALTERNATING VOLTAGES

Willy Minner, Schwaigern, Fed. Rep. of Germany, assignor to Licentia-Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

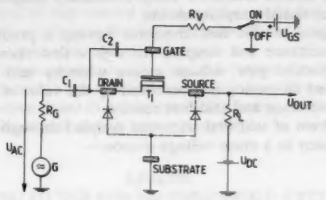
Filed Nov. 28, 1979, Ser. No. 97,910

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1978, 2851789

Int. Cl.³ H03K *17/60*

U.S. Cl. 307—578 **8 Claims**

1. In a circuit for switching and transmitting alternating voltages having an MOS transistor provided with a gate and further provided with source and drain regions surrounded by pn-junctions, biassing means connected to bias both junctions in their blocking direction in the driven condition of the transistor, and circuit means connected for substantially synchronising the gate voltage changes, in the driven condition of the transistor, with the alternating voltage to be transmitted, the improvement wherein said circuit means comprise a capacitance connected between the transmission path of said MOS transistor and said gate for causing the instantaneous potential



difference between the gate voltage and the alternating voltage to be transmitted to correspond to the switching voltage which is required in order to drive said transistor.

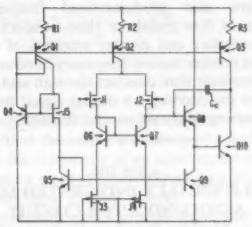
4,316,102
INPUT STAGE USING JUNCTION FIELD EFFECT TRANSISTORS FOR BIASING

James R. Butler, San Jose, Calif., assignor to Fairchild Camera and Instrument Corp., Mountain View, Calif.

Division of Ser. No. 807,602, Jun. 17, 1977, Pat. No. 4,194,136. This application Sep. 13, 1979, Ser. No. 75,435

Int. Cl.³ H03K *17/00, 17/687*

U.S. Cl. 307—296 R **2 Claims**



1. A bias circuit comprising:

at least a pair of bipolar transistors, the bases of said pair of bipolar transistors being connected to each other;

a first junction field effect transistor, the source of which is connected to the emitter of one of said pair of bipolar transistors; and

a second junction field effect transistor, the source of which is connected to the emitter of the other of said pair of bipolar transistors;

wherein the gate electrodes of said first and second junction field effect transistors are connected to a low impedance node and the drain electrodes of said first and second junction field effect transistors are connected to a common bus.

4,316,103
CIRCUIT FOR COUPLING SIGNALS FROM A SENSOR

Harvey C. Nathanson, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 15, 1979, Ser. No. 39,416

Int. Cl.³ H03K *3/353*

U.S. Cl. 307—304 **9 Claims**

1. A circuit for providing an output signal above a predetermined frequency in response to an input signal that may include portions having a frequency below said predetermined frequency, comprising:

means for coupling to an input signal;

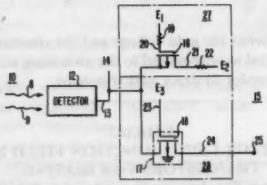
a first field effect transistor having a source, drain, gate and body;

a second field effect transistor having a source, gate and body;

said source and body of said first transistor and said source of said second transistor being commonly coupled to said input signal coupling means;

said gate of said first transistor having a predetermined capacitance and coupled through a first resistor to its respective gate voltage source whereby said predetermined frequency is determined by the value of said gate capacitance and said first resistor;

said drain of said first transistor coupled through a second resistor to a drain voltage source;



said gate of said second field effect transistor coupled to its respective gate voltage source;

means operative to govern the transconductance of said first transistor to be greater than the transconductance of said second transistor whereby greater amounts of signal current below said predetermined frequency conduct through said first transistor than conduct through said second transistor and greater amounts of signal current above said predetermined frequency conduct through said second transistor than conduct through said first transistor and means for deriving an output signal from said signal current passing into said second transistor.

4,316,104
MONOLITHICALLY INTEGRATED DIGITAL SEMICONDUCTOR CIRCUIT

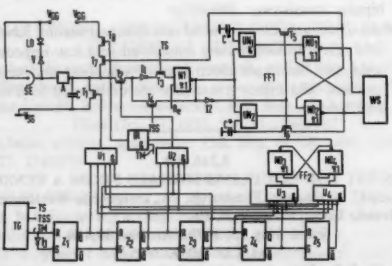
Helmut Rösler, Munich; Heimbert U. Irmer, Gladbeck, and Klaus-Dieter Bigall, Vaterstetten, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 28, 1980, Ser. No. 144,035

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1979, 2917596

Int. Cl.³ H01V *3/38;* H03K *3/26*

U.S. Cl. 307—308 **20 Claims**



1. Monolithically integrated digital semiconductor circuit formed on a semiconductor body and having MIS field-effect transistors and an electric terminal as signal input in the semiconductor body, comprising respective means for applying two operating potentials to the digital semiconductor circuit, a manually actuatable sensor switch connecting said respective means to the electric terminal for applying one of said operating potentials thereto, one of the MIS field-effect transistors having a source drain path and a control gate, the transistor being rendered conductive by an electric pulse applied to said gate thereof and said electric terminal being connected in the semiconductor body to said means for applying the other of said operating potentials thereto through the source-drain path of the transistor, an additional circuit component forming part of the digital semiconductor circuit and representing an AND function, said additional circuit component having at least one terminal connected to said electric terminal and being activatable by an electric pulse applied thereto, and a pulse generating system connected to said gate of said transistor and to said additional circuit component for generating a respective pulse for activating said transistor and said additional circuit component, respectively.

4,316,105
COMPARATOR

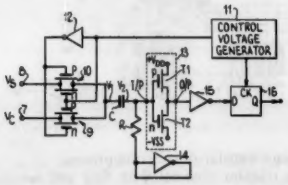
Albert L. Fowler, Kirkcaldry, Scotland, assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 19, 1979, Ser. No. 21,877

Claims priority, application United Kingdom, Apr. 12, 1978, 14419/78

Int. Cl.³ H03K *5/24*

U.S. Cl. 307—362 **2 Claims**



1. A comparator for comparing the magnitude of first and second voltages, comprising inputs for receiving said voltages respectively, a capacitor, switching means arranged to apply from the inputs to the capacitor said first voltage during a sequence of first periods and said second voltage during a sequence of second periods each occurring after a respective one of said first periods, an inverter having its input connected to the capacitor, biasing means arranged to apply a bias voltage to the input of the inverter in such a manner as to cause the output from the inverter to assume a predetermined voltage during said first periods and to assume during said second periods a voltage either greater or less than said predetermined voltage in dependence upon whether said first voltage is greater or less than said second voltage, said biasing means comprising an inverter having its input and output connected together in a feedback loop, and means defining a resistor interconnecting the inputs of the inverters, the inverters constituting a matched pair sharing the same thermal environment, and a flip-flop arranged to be either set or reset in response to the output of the inverter being either greater or less than said predetermined voltage during said second periods whereby the set or reset condition of the flip-flop is indicative of whether the magnitude of said first voltage is greater or less than the magnitude of said second voltage.

4,316,106
DYNAMIC RATIOLESS CIRCUITRY FOR RANDOM LOGIC APPLICATIONS

Ian A. Young, Farmers Branch; David B. Hildebrand, Bedford, and Charles B. Johnson, Carrollton, all of Tex., assignors to Mostek Corporation, Carrollton, Tex.

Filed Jan. 11, 1980, Ser. No. 111,274

Int. Cl.³ H03K *19/096, 19/20, 19/003, 17/687*

U.S. Cl. 307—481 **7 Claims**

1. A logic circuit for receiving an input signal and for gener-

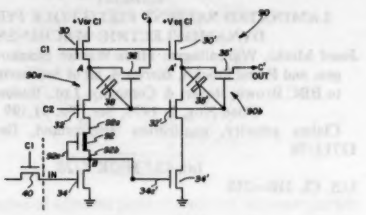
ating a delayed output signal being clocked by first and second non-overlapping clock phases comprising:

voltage supply means;

precharge transistor means interconnected to said voltage supply means and being clocked by the first clock phase;

discharge transistor means interconnected to said precharge transistor means thereby defining a first node and being clocked by the second clock phase to conditionally discharge said first node, said precharge transistor during the first clock phase precharges said first node;

input logic means interconnected to said discharge transistor means thereby defining a second node for providing a



discharge path from said first node to a ground voltage potential, said input logic means connected to receive the input signal;

output transistor means interconnected to said first node for generating the delayed output signal, said output transistor means being clocked by the second clock phase;

capacitor means interconnected to said first node and said output transistor means and being clocked by the second clock phase for maintaining said first node at a predetermined voltage level by a bootstrapping operation; and

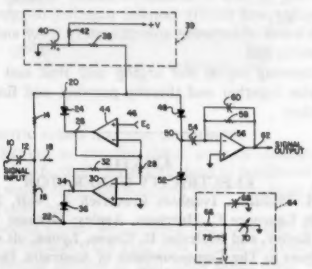
resistor means interconnected between said discharge transistor means and said second node for limiting current flow through said discharge transistor means.

4,316,107

MULTIPLIER CIRCUIT

Daniel B. Talbot, Hudson, Mass., assignor to DBX, Inc., Newton, Mass.

Filed Feb. 28, 1979, Ser. No. 16,148
Int. Cl.³ G06G 7/24, 7/12
U.S. Cl. 307—492 **6 Claims**



1. A multiplier circuit comprising, in combination:

an input terminal for receiving an electrical input signal;

four diode elements connected together to form a diode bridge of two logarithmic responsive elements coupled together to form one side of said bridge and to provide a first junction therebetween, and two antilogarithmic responsive elements coupled together to form the other side of said bridge and to provide a second junction therebetween, said diode bridge being coupled to said input terminal so that a log signal is produced at said first junction as a logarithmic function of said input signal;

means, responsive to a control signal, for shunting the two logarithmic responsive elements at said first junction as a function of said control signal and for producing a signal at said second junction as a function of the sum of said input signal and said control signal; and

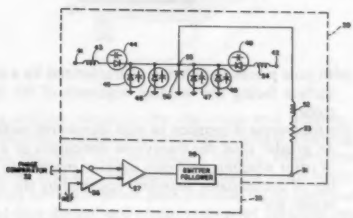
amplification means coupled to said second junction and responsive to signal at said second junction, for producing an output signal as a function of the antilog of the sum of said log signal and said control signal.

4,316,108

TRACKING FILTER FOR FM THRESHOLD EXTENSION

Walter M. Rogers, Jr., 679 Oakridge Dr., Indialantic, Fla. 32903

Filed Sep. 25, 1979, Ser. No. 78,906
Int. Cl.³ H03L 7/04
U.S. Cl. 307—521 **16 Claims**



1. A tracking filter circuit comprising:

a bandpass filter the center frequency of which is adjustable to follow the frequency of an input signal applied thereto and including means for providing a prescribed phase shift to an input signal applied thereto;

a phase comparator, coupled to the input and output of said bandpass filter, for comparing the phase between said input signal and the output of said bandpass filter and for producing a control signal representative of the phase difference between said input signal and the output of said bandpass filter; and

means, coupled between said phase comparator and said bandpass filter, for applying said control signal to said filter to adjust the center frequency of said bandpass filter to follow the frequency of said input signal; and wherein

said phase shift providing means operates such that, in response to a change in the frequency of said input signal, said phase comparator produces a control signal for changing the center frequency of said bandpass filter, and said prescribed phase shift provided by said bandpass filter at the center frequency to which said bandpass filter was previously tuned is the same as that at the changed center frequency to which said bandpass filter is newly tuned.

4,316,109

STATOR FOR MULTIROTOR D.C. MAGNETIC MOTORS

Elmer B. Mason, 901 Vickie Dr., Del City, Okla. 73115

Continuation-in-part of Ser. No. 2,262, Jan. 10, 1979. This application Jul. 21, 1980, Ser. No. 170,438
Int. Cl.³ H02K 23/00
U.S. Cl. 310—114 **2 Claims**

1. A motor assembly, comprising:

an elongated nonmagnetic base;

a pair of spaced-apart plates transversely secured to said base intermediate its ends and normal to the plane thereof;

an end wall secured to one end of said base parallel with said plates; concentric rotors, having an annular space therebe-

tween extending between and journalled by said end wall and one said plate,

each rotor being characterized by a winding having a plurality of axially extending segments and a commutator having a like plurality of segments and including a pair of commutator brushes each transversely spanning a plurality of commutator segments;

at least one pair of opposing pole pieces,

one said pole piece being connected with said one plate and the other said pole piece being connected with the other said plate,

said pair of pole pieces projecting toward said end wall parallel with the axis of said rotors and within the annular space therebetween,

with pole pieces each being characterized by a transverse surface facing the winding segments of the respective rotor,

the transverse dimension of said transverse surface being no greater than the transverse dimension of a plurality of rotor winding segments equal in number to the number of commutator segments spanned by the respective brush; and,

magnetic field producing means connected with said plates for establishing a magnetic field,

whereby said plates and their respective pole piece are magnetized with respectively different polarities to produce a magnetic flux circuit across the respective rotor windings.

4,316,110

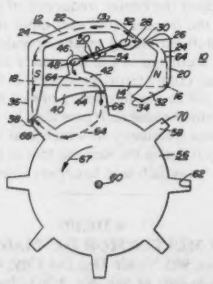
SIGNAL GENERATING DEVICE

Richard A. Lathlaen, Hatfield, Pa., assignor to TRW, Inc., Cleveland, Ohio

Filed Dec. 26, 1978, Ser. No. 972,865

Int. Cl.[2] H02K *21/38*

U.S. Cl. 310—155 **26 Claims**



1. A signal generating device comprising a bistable magnetic device which alters its magnetic state when the density of magnetic flux to which it is subject passes through a predetermined value, detecting means providing an output signal responsive to a change in magnetic state of said bistable device, conducting means for magnetic flux comprising a first portion providing a first path of high permeability and a second portion, said bistable device being connected between the first and second portions of said conducting means for conducting magnetic flux therebetween and being subjected to the conducted magnetic flux, the second portion providing second and third paths through said bistable device each having a respectively alterable permeance for varying in an opposite relationship the respective reluctance of the second and third paths of said conducting means and the density and sense of magnetic flux to which said bistable device is subject, and energizing means for providing magnetic flux of a given polarity to said conducting means for altering the state of said bistable device with the reluctance variations of said conducting means.

4,316,111

LAMINATED SALIENT FIELD POLE PIECE FOR DYNAMOELECTRIC MACHINES

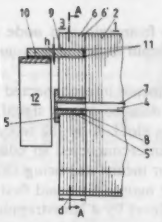
Josef Merki, Würenlingen; Hans-Werner Stankowski, Wettingen, and Franz Stöckli, Birrhard, all of Switzerland, assignors to BBC Brown, Boveri & Company, Ltd., Baden, Switzerland

Filed Nov. 7, 1979, Ser. No. 91,199

Claims priority, application Switzerland, Dec. 14, 1978, 12713/78

Int. Cl.[3] H02K *1/28*

U.S. Cl. 310—218 **8 Claims**



1. A laminated pole for a dynamoelectric machine having salient poles, said pole comprising:

a laminated pole body defining first and second axial ends and comprising a plurality of first sheets axially layered one against another in unbonded relationship;

first and second laminated pole end plates juxtaposed with said first and second axial ends, respectively, of said pole body, each of said end plates comprising a plurality of second sheets, having substantially the same outer contour as said first sheets and being of approximately three millimeters or less in thickness, axially layered one against another and fixedly bonded together to provide a plate thickness of between approximately forty and sixty millimeters; and

pre-stressing means for urging said first and second end plates together and thereby pressing said first sheets together.

4,316,112

ELECTRICITY GENERATOR

John M. Waldron, Ivanhoe; Frederick J. Nott, Pascoe Vale South; Laurence C. Harrison, Aspley; Graham D. Johnson, East Keilor, and Malcolm D. Green, Lyons, all of Australia, assignors to The Commonwealth of Australia, Department of Productivity, Canberra, Australia

Filed May 10, 1979, Ser. No. 37,607

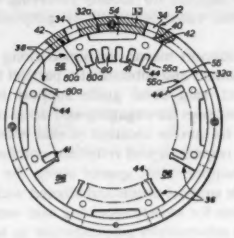
Claims priority, application Australia, May 10, 1978, PD4343

Int. Cl.[3] H02K *1/12*

U.S. Cl. 310—258 **9 Claims**

1. An electrical generator of the inductor-alternator type comprising a stator in the form of an annular magnetic core assembly, a rotor coaxially mounted for rotation within said stator, said core assembly having a plurality of parallel lengthwise slots defined about the inner periphery thereof, field and armature windings of said generator being mounted in said

slots, said core assembly comprising an outer annular yoke formed from material having a high magnetic permeability and a plurality of separate lengthwise extending stacks of laminations of material having high magnetic permeability arrayed about the inner periphery of said annular yoke, said stacks being spaced apart from each other in the circumferential direction of said core assembly so as to form a plurality of lengthwise extending slots therebetween extending from the



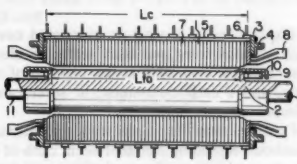
inner peripheries of adjacent pairs of stacks to the inner periphery of said yoke for receiving said field windings, said yoke having a plurality of parallel lengthwise extending slots therethrough in alignment with said stacks whereby said slots are covered at the inner periphery of said yoke by the outer peripheries of said stacks, and said stacks being affixed to said yoke by welds disposed within the lengthwise extending slots in said yoke.

4,316,113

ELECTRIC ROTARY MACHINE

Masaki Sato; Hironori Okuda; Motoya Ito; Yuji Makino; Yasuyuki Wachi; Noriyoshi Takahashi, and Masatoshi Watanabe, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 23, 1979, Ser. No. 41,647
Claims priority, application Japan, May 24, 1978, 53/61007
Int. Cl.³ H02K *1/22*
U.S. Cl. 310—262 **4 Claims**



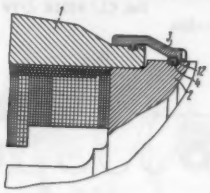
1. An electric rotary machine comprising:
a stator having an annular stator core of laminated steel sheets, slots formed to axially extend in peripheral portion of said stator core, and insulated stator windings disposed in said slots and
a rotor having a rotor axis, a block like rotor core integrally formed with said rotor axis, slots formed to axially extend in peripheral portion of said rotor core, rotor windings fitted in said slots and having end portions axially projecting over the end portion of said rotor core, and a hold ring for supporting the winding end portions against a centrifugal force applied thereto when the rotor is driven, said rotor being axially movable with thermal expansion or shrinkage and/or temperature change of said rotor or a prime-mover directly coupled to said rotor,
wherein the axial length of said rotor core is shorter than the axial length of said stator core so that any end of said rotor core is prevented from projecting over the corresponding end of said stator core during its operation at one of maximum load and a sudden change of load and, when said electric rotary machine is driven at normal operation, the end portion of said rotor core is recessed from the end of said stator core by a distance substantially equal to a gap between said rotor and said stator.

4,316,114

LOCKING STRUCTURE FOR ROTOR END WINDING OF A DISTRIBUTED POLAR ELECTRIC MACHINE

Galina A. Zagorodnaya; Garri M. Khutoretsky, both of Altaiskaya ulitsa, 20, kv. 5., and Gurgen P. Vartanian, Budapeshtskaya ulitsa, 15, korpus 2, kv. 29,, all of Leningrad, U.S.S.R.

Filed Apr. 26, 1979, Ser. No. 33,477
Int. Cl.³ H02K *3/46*
U.S. Cl. 310—270 **1 Claim**



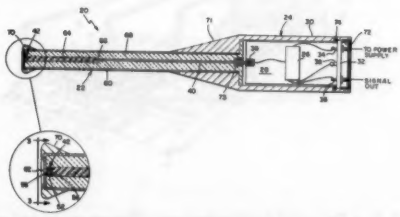
1. In a locking structure for the rotor end winding of a distributed polar electric machine, comprising a retaining ring embracing the rotor end winding, a locking ring embracing said retaining ring and serving to fix it on the rotor body, said locking ring having bayonet joint portions on its inner surface at one end face thereof and a bead at its other end face, serving as a thrust for a ring key, the improvement residing in that the outer surface of the retaining ring has bayonet joint portions dimensioned and configurated to mate with said bayonet joint portions of said locking ring, while the ring key is located on the rotor body.

4,316,115

POLYMERIC PIEZOELECTRIC MICROPROBE WITH DAMPER

David T. Wilson, Billerica; Roger H. Tancrell, Cambridge, and Joseph Callerame, Lexington, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 3, 1979, Ser. No. 99,438
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—327 **15 Claims**



1. A transducer assembly comprising:
a polymeric piezoelectric element having front and back surfaces thereof;
an elongated housing enclosing said piezoelectric element and having a substantially transparent acoustic window at an end thereof in contact with said first surface of said piezoelectric element;
an elongated sound absorbing member in contact with said second surface of said piezoelectric element;
a spacer member disposed circumferentially around said

sound absorbing member and located between said sound absorbing member and said housing, said piezoelectric element having an acoustic impedance substantially equal in magnitude to the impedance of a medium to which said transducer assembly is acoustically coupled for the detection of sonic signals propagating in said medium; and

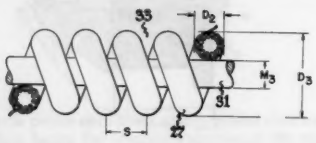
means for isolating said polymeric piezoelectric element from sound waves diffracted from the edge of said acoustic window.

4,316,116

TRIPLE-COIL INCANDESCENT FILAMENT

James A. Graves, Highland Hts., and Gilbert H. Reiling, Chardon, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 19, 1979, Ser. No. 105,580
Int. Cl.³ H01K *1/14*
U.S. Cl. 313—344 **5 Claims**



1. An incandescent lamp comprising an electrically conductive base having a hermetically sealed light-transmissive envelope attached thereto;

means for structurally and electrically mounting a filament within said envelope; and

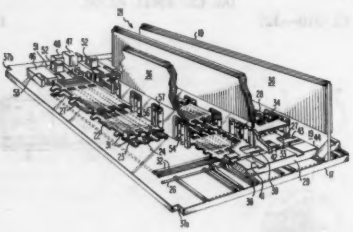
a triple-coil filament electrically connected to and supported by said means for mounting wherein at least two of the coils of the triple-coil filament have mandrel ratios less than 1.0.

4,316,117

BASEPLATE ASSEMBLY FOR FLAT PANEL DISPLAY DEVICES

Charles B. Carroll, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 28, 1980, Ser. No. 116,251
Int. Cl.³ H01J *29/72, 29/02*
U.S. Cl. 313—422 **8 Claims**



1. In a flat panel display device having an evacuated envelope divided into channels by a plurality of vanes and including a front wall and a baseplate arranged substantially parallel and connected by side walls, an improved baseplate assembly comprising:

a plurality of reference notches in said baseplate;

a modulator support accurately affixed to said baseplate with respect to said reference notches and extending transversely across said baseplate substantially perpendicular to said channels and located at the proximal ends of said channels;

a plurality of beam guide assemblies arranged in said channels for propagating electron beams longitudinally along said channels, said beam guide assemblies including proximal retention tabs and distal retention tabs;

beam guide proximal retention recesses arranged in said modulator support for engaging said proximal retention tabs to prohibit longitudinal and transverse motion of the proximal ends of said beam guide assemblies with respect to said modulator support;

proximal vane support slots spaced along the length of said modulator support for loosely receiving said vanes and holding said vanes substantially perpendicular to said baseplate;

distal guide support means positioned along the distal ends of said channels and substantially parallel to said modulator support, said distal guide support including distal retention recesses for engaging said distal retention tabs to retain the transverse location of said beam guide assemblies with respect to said reference notches;

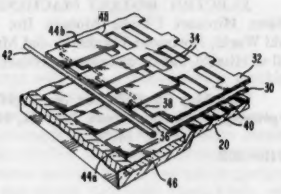
distal vane support slots spaced along the length of said distal guide support means and aligned with said proximal support slots for loosely receiving said vanes and holding said vanes substantially perpendicular to said baseplate.

4,316,118

GUIDED BEAM DISPLAY DEVICE

Charles H. Anderson, Rocky Hill; Thomas L. Credelle, East Windsor, and Wieslaw W. Siekanowicz, Lawrenceville, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jul. 3, 1978, Ser. No. 921,267
Int. Cl.³ H01J *29/56*
U.S. Cl. 313—422 **3 Claims**



1. In a display device having an evacuated envelope with substantially parallel front and back walls, an electron beam guide, a line cathode extending across one end of the electron beam guide, and a cathodoluminescent screen on the front wall; the improvement comprising:

a pair of parallel modulation electrodes positioned with said line cathode extending therebetween, each of said modulation electrodes partially overlapping said beam guide.

4,316,119

TILTED UNITARY DEGAUSSING COIL ARRANGEMENT

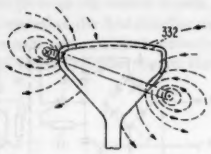
John C. Cooper, Lititz, Pa., assignor to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 12,810, Feb. 16, 1979, abandoned. This application Jan. 27, 1981, Ser. No. 228,869
Int. Cl.³ H04N *9/29*
U.S. Cl. 315—8 **5 Claims**

1. A degaussing arrangement for a color television picture tube, said picture tube comprising an envelope comprising a portion in the general form of the frustum of a cone and having large and small ends, a faceplate portion adjacent said large end, and a neck portion coaxial with said frustum and joined to said small end, said picture tube further comprising a shadow-mask enclosed within said envelope adjacent said faceplate portion and an electron gun assembly enclosed within said neck portion of said envelope, said picture tube further com-

prising a magnetic shield enclosed within said envelope and in the general form of the frustum of a cone and having large and small ends, said shield being adjacent said frustum-shaped portion of said envelope, said degaussing arrangement comprising;

a single degaussing coil encircling said frustum-shaped portion of said envelope, with the axis of said degaussing coil tilted relative to the axis of said frustum-shaped envelope portion in such manner as to dispose a first segment of the circumference of said coil in a position overlying a region of said envelope adjacent a portion of the periphery of



said shadow-mask, and as to dispose a second segment of the circumference of said coil, diametrically opposed to said first segment, in a position which is contiguous with a region of said envelope adjacent said small end of said shield and which is located more remotely from said axis of said frustum-shaped envelope portion than is the adjoining periphery of the opening at said small end of said shield; and

means for supplying a variable alternating current solely to said single degaussing coil to effect degaussing of said shadow-mask and said magnetic shield.

4,316,120

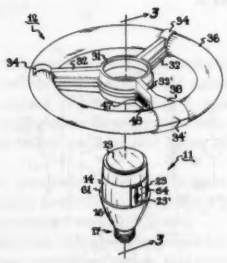
CIRCULAR FLUORESCENT LAMP UNIT

Ronald N. Cotman, Chesterland, and Gustino J. Lanese, South Euclid, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 47,988, Jun. 13, 1979, abandoned. This application Oct. 22, 1980, Ser. No. 199,495

Int. Cl.³ H01J *7/44, 17/34, 19/78;* **H01K** *1/62*

U.S. Cl. 315—58 **6 Claims**



1. A circular lamp unit comprising a central hub and a detachable circular lamp assembly, said hub having an outside diameter of given size and comprising means for connection to a source of electrical power and said circular lamp assembly comprising a circular light bulb having an inside diameter larger than said diameter of the central hub, attachment means for surrounding and providing detachable connection to said hub, and a plurality of individual spokes extending outwardly from said attachment means and supporting said circular light bulb, said spokes defining spaces therebetween through which a lamp harp can pass, said circular lamp assembly being an integral replaceable unit, and said hub containing ballast means for said light bulb.

4. A hub for a circular lamp unit, comprising a housing containing a ballast and provided with an electrical connector base at an end thereof, said housing being devoid of spokes or brackets attached thereto and extending therefrom for holding a lamp.

4,316,121

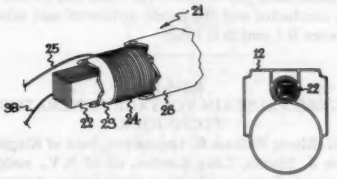
INTEGRALLY BALLASTED FLUORESCENT LAMP UNIT

Edward E. Hammer, Mayfield Village, and Eugene Lemmers, Cleveland Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 1, 1979, Ser. No. 90,500

Int. Cl.³ H01J *7/44, 17/34, 19/78, 23/16*

U.S. Cl. 315—62 **2 Claims**



1. A ballasted discharge lamp unit comprising a ballast connected in series with an elongated discharge lamp, said ballast comprising an elongated magnetizable core wound with a single winding which provides both inductive and resistive components of total ballast impedance, said ballast being positioned alongside and extending along substantially the entire length of said lamp, said inductive and resistive components being of such values that each contributes substantially to the ballasting of the discharge lamp when operating to produce light.

4,316,122

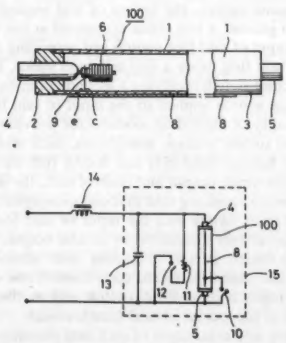
HIGH PRESSURE SODIUM VAPOR DISCHARGE LAMP

Haruo Yamazaki, Moriyama; Yoshiro Ogata, Ibaraki, and Hidezoh Akutsu, Kobe, all of Japan, assignors to Matsushita Electronics Corporation, Kadoma, Japan

Filed Oct. 3, 1979, Ser. No. 81,557

Int. Cl.³ H01J *7/44, 17/34, 19/78, 23/16*

U.S. Cl. 315—74 **5 Claims**



1. A high pressure sodium vapor discharge lamp comprising an outer bulb enclosing a discharge tube in an evacuated space

therein, said discharge tube comprising a translucent and chemically stable tube envelope of alumina containing therein sodium, xenon gas, a buffer gas which is at least one member selected from the group consisting of mercury and cadium, and discharge electrodes sealed in both end parts of said tube envelope,

characterized in that

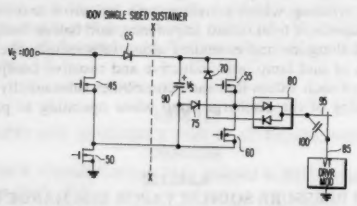
at least one of said discharge electrodes has a projection conductor which is disposed extending therefrom towards and in proximity to an inside surface of a side wall of said tube envelope with a predetermined gap inbetween, that

a starting aid conductor is disposed lengthwise on the outside surface of said side wall in a manner to face the outer end part of said projection conductor via said side wall, said starting aid conductor having a connection which impresses a potential substantially idential to that of the other discharge electrode, and that said xenon gas is sealed to have a pressure of 150 Torr or more, and that said predetermined gap between the outer end of said projection conductor and the inside surface of said side wall is between 0.3 mm to 0.7 mm.

4,316,123
STAGGERED SUSTAIN VOLTAGE GENERATOR AND TECHNIQUE

Bergert G. Kleen; William R. Lamoureux, both of Kingston, and William J. Martin, Lake Katrine, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 8, 1980, Ser. No. 110,313
Int. Cl.³ H05B *41/30*
U.S. Cl. 315—169.4 **3 Claims**



1. A circuit for providing a plurality of sustain voltage waveforms to selected portions of a gas discharge display panel comprising:

(a) a common module having first (45) and second (50) switches each having an input, output and control port, the output of said first switch connected to the input of said second switch, the output of said second switch applied to ground, a first diode connected at one end thereof to the input of said first switch and providing at the other end of said first diode a first common signal, the input of said second switch receiving a second common signal, and a voltage source applied to the input of said first switch;

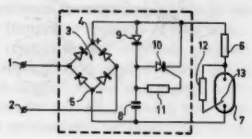
(b) a plurality of individual modules for providing said plurality of sustain voltage waveforms, each said individual module having third (55) and fourth (60) switches each having an input, output and control port, the input of said third switch receiving said first common signal, the output of said third switch and the input of said fourth switch each operatively connected to an axis output, the output of said fourth switch providing said second common signal, and capacitor means connected at one end thereof to the input of said third switch and at the other end thereof to the output of said fourth switch;

(c) whereby said axis output of each said plurality of individual modules provides an alternating waveform having a preselected frequency to selected portions of said gas discharge display panel, the phases of said alternating outputs of each said individual modules being displaced from each other to thereby distribute avalanche currents in said discharge display panel.

4,316,124
MIXED LIGHT ARRANGEMENT

Jozef K. P. Verwimp, and Gabriël Deloddere, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 24, 1979, Ser. No. 78,524
Claims priority, application Netherlands, Oct. 2, 1978, 7809907
Int. Cl.³ H05B *41/16*; H01J *61/56, 61/96*
U.S. Cl. 315—205 **6 Claims**

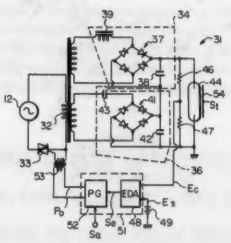


1. A mixed-light arrangement comprising two input terminals for connection to an a.c. voltage source having a frequency below 100 Hz, a rectifier bridge having inputs respectively connected to said input terminals and outputs interconnected by a series arrangement of an incandescent filament and a discharge tube, the series arrangement being shunted by a branch comprising a capacitor connected in series with a rectifier and a controlled rectifier connected in anti-parallel, and a control circuit coupled to the controlled rectifier which renders the controlled rectifier conductive towards the end of each half cycle of the a.c. voltage source in the operating condition of the mixed light arrangement.

4,316,125
POWER SUPPLY FOR A FLASH TUBE

Koichi Noguchi, Tokyo, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 18, 1979, Ser. No. 87,601
Claims priority, application Japan, Oct. 18, 1978, 53-128017
Int. Cl.³ H05B *41/30*
U.S. Cl. 315—241 R **6 Claims**



1. A power supply apparatus comprising:

a flash tube;

first rectifier means;

first smoothing filter means connected between an output of the first rectifier means and the flash tube;

second rectifier means;

second smoothing filter means connected between an output of the second rectifier means and the flash tube;

switch means for connecting the first and second rectifier means to an A.C. power source in a unitary manner;

sensor means for sensing a voltage across the flash tube and

turning on the switch means when the sensed voltage is below a predetermined value and turning off the switch means when the sensed voltage is above a predetermined value;

a current limiting inductance means connected between the switch means and the first rectifier means;

a current limiting capacitance means connected between the switch means and the second rectifier means, an inductance of the inductance means and a capacitance of the capacitance means being selected in such a manner that a power factor of the power supply is substantially unity; and

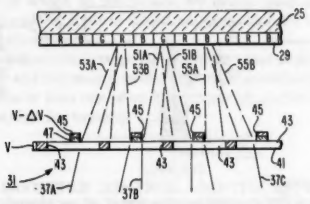
a transformer having a primary winding connected to the power source through the switch means, a first secondary winding connected to the first rectifier means through the inductance means and a second secondary winding connected to the second rectifier means through the capacitance means.

4,316,126

COLOR TELEVISION PICTURE TUBE WITH COLOR-SELECTION STRUCTURE AND METHOD OF OPERATION THEREOF

Eric F. Hockings, Princeton, and Carmen A. Catanese, Rocky Hill, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 23, 1979, Ser. No. 96,974
Int. Cl.[3] H01J *29/80*
U.S. Cl. 315—375 12 Claims



1. In a color television picture tube including

(a) a target comprising an array of substantially parallel phosphor stripes of three different emission colors arranged in cyclic order in adjacent triads, each triad comprising a stripe of each of said three different emission colors,

(b) means for producing three convergent in-line electron beams directed towards said target in a plane that is substantially normal to said stripes, and

(c) a color-selection structure positioned between said target and said beam-producing means, said structure comprising (i) a metal masking plate having therein an array of apertures arranged in columns that are substantially parallel to said phosphor stripes, and (ii) an array of narrow conductors extending substantially parallel to said stripes and insulatingly spaced from said masking plate, with each conductor being substantially centered over the apertures of one of said columns, said masking plate and said conductors defining an array of windows for transmitting therethrough portions of said electron beams, there being two columns of windows between adjacent conductors,

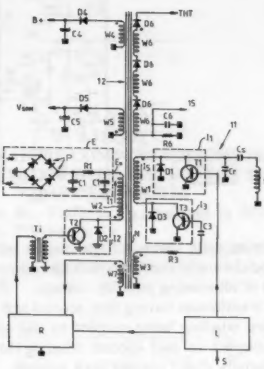
the improvement wherein said conductors are opposite and spaced from the boundaries between adjacent triads.

4,316,127

PROCESS FOR MAINTAINING AN ELECTRIC OSCILLATION CIRCUIT AND HORIZONTAL DEFLECTION DEVICE FOR A CATHODE-RAY TUBE

Andre' Lamoureux, Brunoy, France, assignor to Videocolor, S.A., Montrouge, France

Filed Feb. 2, 1981, Ser. No. 230,827
Claims priority, application France, Jan. 31, 1980, 80 02055; Nov. 5, 1980, 80 23586
Int. Cl.[3] H01J *29/70, 29/76*
U.S. Cl. 315—408 16 Claims



1. A process for maintaining an electric oscillation circuit with two sequentially commutable oscillation frequencies for the line sweep of a cathode-ray tube, of the type inducing the keep-alive energy level in a first inductive winding connected to said electric oscillation circuit at the common terminal of two of that circuit's condensers, with the lowest oscillation frequency being established for the sweep trace period of the sweep cycle when that condenser is short-circuited and the highest oscillation frequency being established during the retrace period of the sweep when that condenser is not short-circuited, said process being characterized by the fact that, by means of a second inductive winding which may be connected to a source of continuous voltage and coupled to said first winding with a high electromagnetic coupling coefficient by means of a magnetic circuit, it consists in:

interconnecting the aforesaid second winding to the terminals of said continuous voltage source during each sweep trace period referred to above until a predetermined energy level is reached in said magnetic circuit, while keeping the aforesaid first winding disconnected;

disconnecting said second winding when said energy level is reached, preferably while simultaneously connecting said first winding to the terminals of the aforesaid short-circuited condenser until the end of the said sweep trace period if the energy level referred to is reached before the end of that sweep trace period;

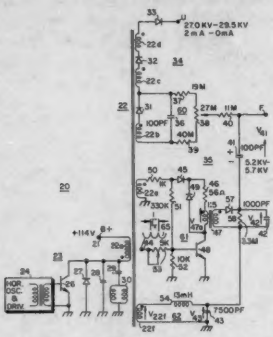
breaking the short-circuit at the terminals of said condenser during the entire retrace period, while keeping the aforesaid first winding connected during at least part of that retrace period; and

again disconnecting the aforesaid first winding, preferably at the end of the retrace, and connecting the aforesaid second winding to the terminals of said source of continuous voltage.

4,316,128
TELEVISION RECEIVER FOCUS VOLTAGE CIRCUIT

Shinichi Shiratsuchi, Tokyo, Japan, assignor to RCA Corporation, New York, N.Y.

Filed Jun. 13, 1980, Ser. No. 159,328
Int. Cl.[3] H01J 29/70
U.S. Cl. 315—411 9 Claims



1. A picture tube focus voltage circuit with vertical frequency modulation of the focus voltage, comprising:

a source of alternating polarity voltage;

an input transformer having first, second and third windings, said first winding being coupled to said source;

means coupled to said second winding for generating a substantially direct current high voltage;

means coupled to said third winding for forming a voltage pulse each cycle of said alternating polarity voltage;

means coupled to said voltage pulse forming means for varying the amplitude of said voltage pulse at a vertical rate in a parabolic manner;

an envelope detector coupled to said voltage pulse forming means for detecting the parabolic modulation of the amplitude of said voltage pulse to produce a substantially parabolically shaped vertical frequency voltage; and

means for summing said direct current high voltage and said parabolically shaped vertical frequency voltage to produce said focus voltage.

4,316,129
X-RAY TUBE CONTROL SYSTEM

Jonathan S. Shapiro, Greenwich, and William P. Holland, West Redding, both of Conn., assignors to The Machlett Laboratories, Incorporated, Stamford, Conn.

Division of Ser. No. 847,877, Nov. 2, 1977, Pat. No. 4,225,787. This application Apr. 17, 1980, Ser. No. 141,086
Int. Cl.[3] H02P 5/16
U.S. Cl. 318—313 15 Claims

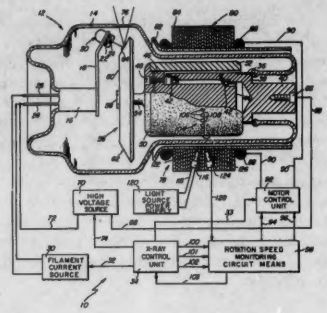
1. A rotational speed control system including:

an electric motor comprised of a cylindrical rotor disposed within a hollow cylindrical stator;

motor control means electrically connected to the stator for sending an electrical current therethrough and producing a corresponding rotational movement of the rotor;

reflective photoelectric means disposed within the stator for sensing rotational movement of the rotor and producing corresponding electrical output signals; and

speed monitoring circuit means connected electrically to the photoelectric means and the motor control means for

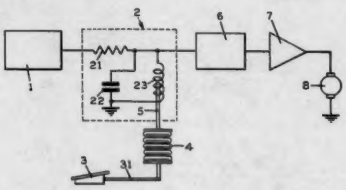


measuring the rotational speed of the rotor and sending regulatory electrical signals to the motor control means.

4,316,130
PNEUMATIC DEVICE TO CONTROL THE SPEED OF AN ELECTRIC MOTOR

Marcel Louarn, Le Lion d'Angers, France, assignor to Kollmorgen Technologies Corporation, Dallas, Tex.

Filed May 14, 1980, Ser. No. 149,647
Claims priority, application France, May 29, 1979, 79 13657
Int. Cl.[3] H02P 5/16
U.S. Cl. 318—551 5 Claims

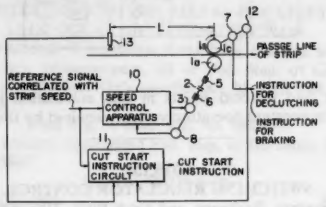


1. A device for controlling the speed of an electric motor from a pneumatic pressure control means, characterized in that it comprises a pneumatic pressure control means; an element deformable with the pressure controlled by said pressure control means which includes metal bellows having a pressure inlet, and spring means incorporated on the inside or outside of said bellows and attached to them to permit a predetermined deformation of said bellows in relation to said pressure, and a rod of magnetic material attached to and moving with the deformation of said bellows; an inductance oil; an element of magnetic material attached to and forming one mechanical unit with said pressure deformable element, and aligned with said inductance coil for modifying the inductance of said inductance coil as a function of the deformation of the deformable element as said magnetic element is advanced into or retracted from said coil; said inductance coil forming part of tunable trap circuit means; further comprising oscillator means connected to the input of said tunable circuit means; and rectifier means connected to the output of said tunable circuit means for providing a D.C. signal of an amplitude being a function of the deformation of said deformable element and thus of the pressure provided by said pressure control means; and amplifier means connected to the output of said rectifier means and energizing, and thus controlling the speed of said electric motor.

4,316,131
CONTROL APPARATUS OF FLYING SHEARS

Tsutomu Miyamoto, Hachioji, and Takayuki Matsudaira, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Nov. 24, 1978, Ser. No. 963,396
Claims priority, application Japan, Nov. 30, 1977, 52-143387
Int. Cl.³ G05B 5/01
U.S. Cl. 318—612 **13 Claims**



1. In a control apparatus of a flying shear wherein a clutch is actuated to transmit the rotation of a drive motor to a cutting blade to rotate the same for achieving cutting and then the clutch is disengaged and the cutting blade is stopped by means of a brake, the improvement which comprises:

rotational angle indicating means for producing a signal indicating a rotational angle of the cutting blade,

a speed signal generator for generating a signal corresponding to the speed of the cutting blade,

a rest point establishing device for establishing a rest point for the cutting blade,

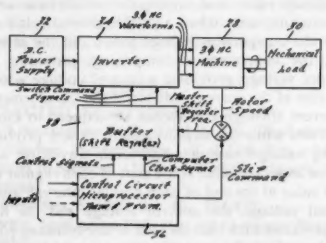
an operation circuit receiving the output of said rotational angle indicating means and the output of said speed signal generator and performing an operation, for obtaining the angle at which an instruction for declutching is to be produced and the angle at which an instruction for braking is to be produced, and

an instruction circuit responsive to the output of said operation circuit and the output of said rest point establishing device to produce at least one of an instruction for declutching and an instruction for braking.

4,316,132
PWM INVERTER CONTROL AND THE APPLICATION THEREOF WITHIN ELECTRIC VEHICLES

Steven Geppert, Bloomfield Hills, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 4, 1979, Ser. No. 36,118
Int. Cl.³ H02P 5/34, 5/36
U.S. Cl. 318—723 **23 Claims**



1. A control apparatus for use with an inverter of the type which provides a PWM power output to an A.C. induction machine at a preselectable frequency and a preselectable voltage from a substantially fixed D.C. bus, said A.C. machine having characteristic stator and rotor frequencies associated therewith, said control apparatus comprising:

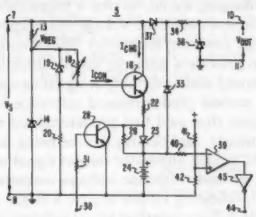
a control circuit operative to receive a plurality of parametric inputs and to generate optimized switch command signals at a first rate established by a clock independent of said stator and rotor frequencies; and

shift register means operative to receive and store said switch command signals and to transfer said signals to the inverter at a second rate established by a synchronizing signal which is a function of the summation of signals representative of machine rotor speed and a derived slip command.

4,316,133
TEMPERATURE COMPENSATED BATTERY CHARGING SYSTEM WITH TESTING FOR BATTERY BACK-UP SYSTEM

Philip F. Locke, Jr., Trafford, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 5, 1980, Ser. No. 184,498
Int. Cl.³ H02J 7/00, 9/00
U.S. Cl. 320—48 **14 Claims**



1. A temperature compensated circuit for charging and testing a back-up battery of an external system, comprising:

input terminals adapted for connection to a source of unregulated voltage;

output terminals adapted for connection to a load, said output terminals connected to said input terminals;

means for regulating the source voltage, said means connected across said input terminals, said means producing a regulated voltage;

a test load;

first switching means for conducting a charging current, said first switching means said test load and the battery being series connected across said input terminals;

a temperature variable resistance, said resistance cooperating with said regulated voltage to produce a control current regulating the conduction of said first switching means;

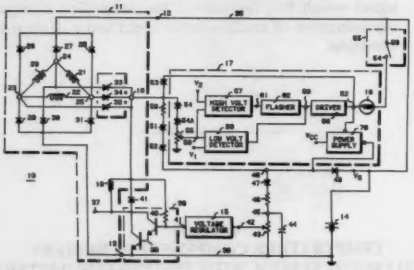
second switching means for electrically grounding said charging current in response to a signal generated by the external system, said second switching means electrically connected in parallel with the series combination of said battery and said test load such that when said charging current is grounded said test load is electrically connected across said battery; and

means for reading the battery voltage, said battery connected to said output terminals such that said battery voltage is available at said output terminals in the event said source voltage fails.

4,316,134
FAULT INDICATING CIRCUIT FOR AN AUTOMOTIVE ALTERNATOR BATTERY CHARGING SYSTEM

Isadore Balan, Schaumburg, and Kirk A. Sievers, Roselle, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 4, 1980, Ser. No. 137,332
Int. Cl.³ H02J 7/14
U.S. Cl. 322—99 **12 Claims**



1. A fault indicating circuit for an automotive alternator battery charging system, comprising:

low voltage detector means for illuminating a display device to provide one visual indication in response to a sensed alternator output signal, related to a rectified alternator output charging signal, having a magnitude below a first predetermined reference voltage magnitude; and

high voltage detector means for illuminating said display device to provide a different visual indication in response to said sensed alternator output signal having a magnitude above a second predetermined reference voltage magnitude greater than said first predetermined reference voltage magnitude, said display device being non-illuminated when said sensed alternator output signal is between said first and second reference voltage magnitudes, whereby said fault indicating circuit utilizes a single display device to provide different distinct visual indications indicative of high and low alternator output modes of failure for an alternator battery charging system,

wherein said display device comprises a lamp, and

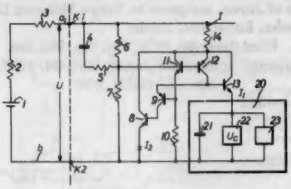
wherein said circuit includes circuitry for serially coupling said lamp and a field coil of said alternator such that said lamp supplies initial excitation current for said field coil when said alternator output charging signal and said sensed alternator output signal are substantially zero.

4,316,135
CIRCUIT ARRANGEMENT FOR FEEDING MODULES IN USER STATIONS

Bernhard Rall, Ulm, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 6, 1980, Ser. No. 175,852
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1979, 2931922
Int. Cl.³ G05F 1/46
U.S. Cl. 323—265 **3 Claims**

1. A circuit arrangement for feeding a module containing a component requiring a constant operating voltage in a user station fed by a current-conducting connection path, comprising: current control means connected for controlling the current in said connection path; resistance control means connected for controlling the alternating current resistance presented by said circuit arrangement to said connection path; means defining a first current conducting branch connected for feeding current supplied by said connection path to said module; and means defining a second current conducting branch connected for conducting current supplied by said connection path in a manner to bypass said module only when the voltage

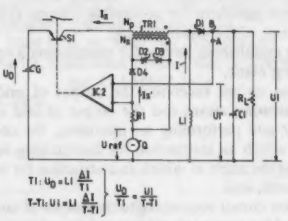


between two selected points in said connection path falls below the constant operating voltage required by the module.

4,316,136
SWITCHING REGULATOR CONTROL

Jürgen Saxarra, Backnang, and Erich Pivit, Allmersbach, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed May 16, 1980, Ser. No. 150,660
Claims priority, application Fed. Rep. of Germany, May 18, 1979, 2920165
Int. Cl.³ G05F 1/56
U.S. Cl. 323—282 **3 Claims**



1. In a method for controlling a switching regulator composed of a controllable electronic switch and a transformer, in which the electronic switch forms a series path with the transformer primary, the series path is connected in series between a direct voltage source and a load, and the amplitude of the current flowing through the switch constitutes a criterion for controlling the load voltage, which method includes periodically causing the switch to assume one switching state at regular intervals occurring with a predetermined frequency, comparing the value of a comparison voltage corresponding to the load voltage and having a selected nominal value with a second voltage value, and causing the switch to assume its opposite switching state when a predetermined relation exists between the comparison voltage value and the second voltage value, the improvement comprising: providing a constant reference voltage; providing a control voltage which varies as a function of the current induced in the transformer secondary by current through the switch subsequent to closing of the switch and while the switch remains closed; providing a time-varying voltage having a sawtooth waveform and varying between an initial value at the start of each regular interval and a final value at the end of each regular interval; and giving the constant voltage, the control voltage and the time-varying voltage values such that the sum of the constant voltage value, the value which the control voltage would have at the end of an interval if the switch were closed during the entire interval, and the final value of the time-varying voltage is greater than the sum of the nominal value of the comparison voltage and the maximum permissible value of a jump in the comparison voltage corresponding to a maximum acceptable interfering voltage jump in the load voltage, and the sum of the constant

voltage value, the value of the control voltage at the start of an interval and the initial value of the time-varying voltage is less than the difference between the nominal value and the maximum permissible jump value of the comparison voltage; with the second voltage value being defined by the sum of the values of the constant reference voltage, the control voltage and the time-varying voltage.

4,316,137

COMPLETELY INSULATED, METAL-ENCAPSULATED ELECTRICAL SWITCHING SECTION

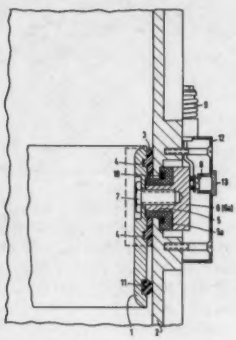
Manfred Osterloh, Rüsselsheim; Otto Putz, Maintal, and Walter Stecker, Heusenstamm, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 5, 1980, Ser. No. 184,477

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1979, 2939006

Int. Cl.³ H03H *1/00*

U.S. Cl. 323—364 **7 Claims**



1. In a completely insulated, metal encapsulated electrical switching section including disposed therein a tube in the form of a large-area electrode arranged coaxially in a tubular jacket of the metal encapsulation, the tube being fastened electrically insulated to the tubular jacket, the tube in cooperation with a conductor arranged centered in the tubular jacket forming a capacitor of a capacitive voltage transformer, the improvement comprising an insulating tube section disposed between the tube and the tubular jacket, an insulating bushing extending through the wall of the insulating tube section and through the wall of the tubular jacket, a metallic bushing on which the insulating bushing is seated, a screw received in the metallic bushing for clamping the insulating tube section between the tube and the tubular jacket, the insulating bushing having a flange portion clamped between the outside of the tubular jacket and a flange portion of the metallic bushing, and a voltage take-off connected to the metallic bushing.

4,316,138

ELECTRIC SWITCHING SECTION

Erich Adolph, Frankfurt am Main; Ünal Bayrak, Bischofsheim, and Walter Stecker, Heusenstamm, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

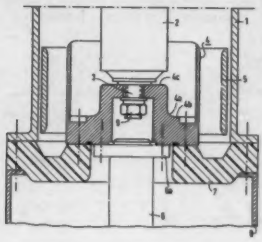
Filed Sep. 5, 1980, Ser. No. 184,472

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1979, 7927354[U]

Int. Cl.³ H03H *1/00*

U.S. Cl. 323—364 **2 Claims**

1. In an electric switching section with a metal encapsulation which contains insulating gas and, for each phase, at least one transformer and a vacuum switching tube which is enclosed by the transformer, the tube having a stationary terminal connected to a cable terminal, the improvement comprising a transformer which includes a cup-shaped electrode forming the inner electrode of a capacitive voltage transformer, the cup-shaped electrode having a bottom which is detachably connected to the stationary terminal of the vacuum switching



tube and to an extension of the cable terminal, a feedthrough plate being arranged below the cup-shaped electrode to which the cup-shaped electrode is detachably fastened, the cable terminal having an extension which passes through the feedthrough plate.

4,316,139

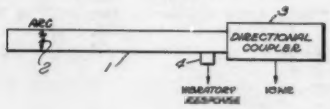
METHOD AND APPARATUS FOR DETERMINING THE LOCATION OF AN ARC IN A WAVEGUIDE TRANSMISSION LINE OR THE LIKE

Errol L. Root, Simi Valley, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jun. 13, 1979, Ser. No. 48,093

Int. Cl.³ G01R *31/08*

U.S. Cl. 324—52 **16 Claims**



8. Apparatus for locating an arc in a waveguide comprising:

(a) first means for detecting standing waves at an arbitrary point along said waveguide said standing waves corresponding to initiation of an electromagnetic disturbance in said waveguide resulting from said arc;

(b) second means for detecting a vibratory disturbance corresponding to said electromagnetic disturbance in the waveguide resulting from said arc, said second means being disposed at a predetermined location along said waveguide and in acoustic contact therewith;

(c) counter means responsive to said first and second means for measuring the time interval between initiation of said electromagnetic disturbance and detection of said vibratory disturbance; and

(d) third means for calculating the distance between the location of the arc and said predetermined location based upon the measured time interval and the speed of vibratory disturbances in said waveguide.

4,316,140

CHARGE-FLOW TRANSISTORS

Stephen D. Senturia, Boston, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

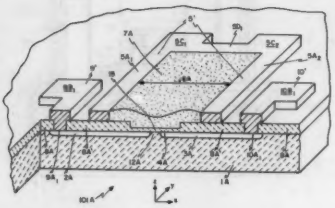
Filed Sep. 17, 1979, Ser. No. 76,037

Int. Cl.³ G01N *27/00*; H01L *29/78, 29/84*

U.S. Cl. 324—71 SN **10 Claims**

1. A charge-flow transistor comprising a semiconductor substrate, a source region in the substrate, a drain region in the

substrate, and electrically sensitive region in the substrate between the source region and the drain region, gate means comprising a pair of interconnected highly conductive fingers with a gap between the fingers and a gap material having much less conductance than the highly conductive fingers disposed in said gap, said gap material being electrically connected to the highly conductive fingers to permit charge flow therebetween, a gate insulator sandwiched between the gap material



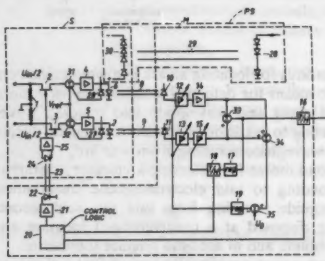
and the electrically sensitive region, said electrically sensitive region being electrically sensitive to any bias electric field applied through the gate insulator, said bias electric field being created in said charge-flow transistor substantially totally by charge patterns in the gap material at and near the interface between the gap material and the gate insulator to provide a charge-flow transistor whose TURN-ON time t_{on} is about equal to the TURN-OFF t_{off} thereof.

4,316,141

MEASURING DEVICE WITH OPTICAL SIGNAL TRANSMISSION

Morgan Adolfsson, and Torgny Brogårdh, both of Vesteras, Sweden, assignors to ASEA Aktiebolag, Vesterås, Sweden

Filed Oct. 24, 1979, Ser. No. 87,773
Claims priority, application Sweden, Oct. 27, 1978, 7811165
Int. Cl.³ G01R *31/00;* H04B *9/00*
U.S. Cl. 324—96 **14 Claims**



1. Measuring device for providing output signals representative of input measuring signals, comprising:

a transmitter for combining input measuring signals with a reference signal and forming at least two different signals therefrom;

a receiver responsive to said at least two different signals for forming output signals representative of said input measuring signals;

at least two optical transmission channels for transmitting said at least two different signals from said transmitter to said receiver; and

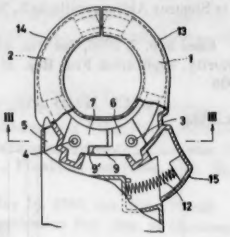
said receiver including at least one variable gain amplifier responsive to the transmission output from one of said at least two optical transmission channels, compensation means for generating at least one reference signal from said at least two different signals, and the gain of said variable gain amplifier being controlled by said at least one reference signal such that said output signals are independent of drift and instability in the transmitter, receiver and at least two optical transmission channels.

4,316,142

CLAMP TYPE AMMETER

Takeo Kuramoto, Tokyo, Japan, assignor to Kyoritsu Electrical Instruments Works, Ltd., Tokyo, Japan

Filed May 13, 1980, Ser. No. 149,340
Claims priority, application Japan, Nov. 20, 1979, 54-159892
Int. Cl.³ G01R *1/22;* H01F *17/06*
U.S. Cl. 324—127 **3 Claims**



1. A clamp type ammeter, comprising:

a laterally symmetrical pair of magnetic cores each pivotally attached to a support shaft,

first actuating means provided at a basal portion pivotally attached to the first of said pair of magnetic cores, said first actuating means possessing a fitting portion adapted to join the basal portion of the first magnetic core and an actuating piece protruding from one lateral lower side of the fitting portion,

second actuating means provided at a basal portion pivotally attached to the second of said pair of magnetic cores, said second actuating means possessing a fitting portion adapted to join the basal portion of the second magnetic core and a receiving piece protruding from one lateral upper side of the fitting portion, said receiving piece of the second actuating means being underlaid by said actuating piece of the first actuating means,

spring means adapted to produce an energizing force such as to keep said pair of magnetic cores in a closed state, and

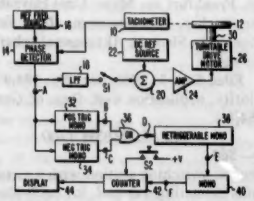
a trigger adapted to act upon said first magnetic core in the direction of bringing the pair of magnetic cores into an opened state.

4,316,143

SPEED DEVIATION DETECTOR FOR SERVO CONTROLLED DISC MASTERING TURNTABLE

Richard M. Castle, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed May 29, 1980, Ser. No. 154,599
Int. Cl.³ G01P *3/46*
U.S. Cl. 324—161 **5 Claims**



1. A detector for detecting speed errors of a PLL servo

controlled turntable, said PLL servo having a given phase lock range, said detector comprising:

phase detector means in said PLL servo responsive to a reference signal and a turntable speed indicating signal supplied thereto for producing a control signal for regulating the speed of said turntable, said control signal exhibiting symmetry variations characteristic of said speed errors; and

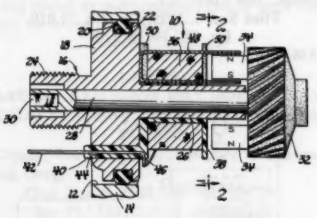
symmetry deviation detection means responsive to said control signal for providing a first output signal manifestation when said symmetry variations are within predetermined limits and a second output signal manifestation when said symmetry variations exceed said predetermined limits, said predetermined limits lying within said given phase lock range of said PLL servo.

4,316,144

INTEGRAL MECHANICAL AND ELECTRICAL VEHICLE SPEED SENSOR

Wayne A. Levijoki, Clio, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 23, 1979, Ser. No. 96,847
Int. Cl.³ G01P *3/48, 3/54*
U.S. Cl. 324—174 **2 Claims**



1. A combined electrical and mechanical speed sensor for mounting in the speedometer cable drive port of a vehicle transmission housing for driving engagement with a transmission driving gear therein to produce an electrical speed signal and a rotary mechanical speed output, comprising

a sleeve member adapted for mounting in a transmission housing cable drive port including an inner portion adapted to extend into the housing,

a shaft rotatably journalled in the sleeve member and having an inner end adapted to extend into the housing and an outer end adapted to connect to a speedometer cable,

a driven gear fixed on the inner end of the shaft adjacent the said sleeve member inner portion and adapted to drivingly couple the shaft to the said transmission driving gear,

an annular sensing coil surrounding the inner portion of the sleeve member and mounted thereon,

at least one magnet mounted on the driven gear for rotation therewith in a path adjacent the sensing coil, and

at least one polepiece extending through the sensing coil and to the magnet path for coupling magnetic flux from the magnet to the sensing coil,

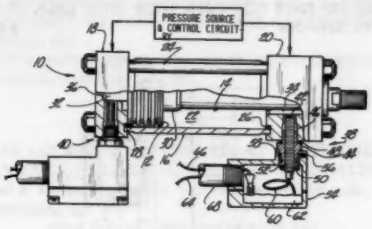
whereby a pulsed electrical signal having a frequency proportional to the rotational speed of the driven gear is induced in the sensing coil and a mechanical speed output is provided at the outer end of the shaft.

4,316,145

FLUID PRESSURE ACTUATOR WITH PROXIMITY POSITION SENSOR

David Tann, Detroit, Mich., assignor to Electro-Mechanical Products, Detroit, Mich.

Continuation of Ser. No. 728,555, Oct. 1, 1976, abandoned. This application Jul. 13, 1978, Ser. No. 924,326
Int. Cl.³ G01B *7/14;* **H01H** *9/00*
U.S. Cl. 324—208 **5 Claims**



1. A fluid pressure actuator including:

a fluid pressure cylinder;

a movable piston member slidably disposed in said cylinder;

a pair of end caps, one each mounted to said cylinder to cover either end of said cylinder to define a fluid pressure chamber in said cylinder, with said piston moving into abutment with either end cap during movement in said cylinder;

a piston rod mounted to said piston to form a piston and rod assembly and extending through said cylinder and a bore formed in one of said end caps;

at least one cushioning plug adjacent said piston and forming a part of said piston or said piston rod, said cushioning plug forming a localized change in diameter portion of said piston and rod assembly immediately adjacent said piston;

at least one axially extending cushioning plug chamber formed in at least one of said end caps positioned and configured to receive said at least one cushioning plug as said piston approaches said end cap;

means for pressurizing said fluid pressure chamber so as to cause said piston member to be reciprocated in said fluid pressure chamber;

at least one opening formed in said at least one end cap extending laterally into said at least one cushioning chamber;

electrical proximity sensor means sensing the position of said cushioning plug within said fluid pressure chamber at at least one position in said movement, said proximity sensor means including a threaded proximity sensor plug adjustably mounted in said opening for selective movement toward and away from said one cushioning chamber and extending into said one cushioning chamber, said proximity sensor means generating a signal by movement of said cushioning plug into said at least one cushioning chamber;

circuit means associated with said electrical proximity sensor so as to generate said signal generated upon movement of said cushioning plug into said at least one cushioning chamber;

a nut member threadedly receiving said threaded sensor plug and releasably securing said threaded sensor plug against movement relative to said one cushioning chamber;

a junction housing disposed along side said at least one end cap mounted on said nut member with said sensor plug extending into said junction housing interior;

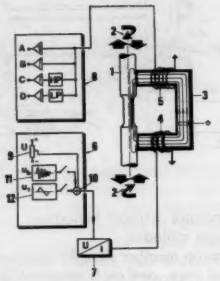
further including electrical leads secured to said proximity sensor extending through said threaded plug into said junction housing and wherein said circuit means is con-

tained within said junction housing electrically connected to said proximity sensor means by said electrical leads.

4,316,146
METHOD AND DEVICE FOR MEASURING AND DETECTING A CHANGE IN THE MECHANICAL STATE OF A BODY

Leif A. Jilken, S-58252, Linköping, Sweden

Filed Aug. 20, 1979, Ser. No. 68,183
Claims priority, application Sweden, Dec. 12, 1977, 7714053
Int. Cl.³ G01B *7/24*; G01R *33/18, 33/12*; G01N *27/72*
U.S. Cl. 324—209 **5 Claims**



1. A method for measuring or detecting a change in the mechanical state such as a change in the mechanical load, yielding, crack initiation, crack propagation, separation within the material or vibration or the time derivative of the change in the mechanical state in a body showing magnetostrictive effects, when, under the influence of a driving magnetizing force (H) an associated magnetic flux is generated in at least a part of the body, on which flux the change in the mechanical state via the magnetization (M) acts as a measurable or detectable disturbance, characterized in that the driving magnetizing force (H_O) and the average length (l) of the magnetic circuit are kept essentially constant and independent of the change in the mechanical state, the flux consists partly of a main flux (ϕ_O) associated with the driving magnetizing force (H_O) having a definite direction and being of such a magnitude that the magnetic properties of the body depart from the region of irreversibility and partly of an alternating gradually vanishing flux (ϕ_v) superposed upon the main flux, the alternating gradually vanishing flux must have such an initial magnitude that saturation is obtained in both directions of the alternating gradually vanishing flux (ϕ_v), so that, a point on the anhysteretic curve of the body is reached when the alternating flux (ϕ_v) has vanished, thereafter the disturbance generated through the change in the mechanical state is indicated or registered as a voltage, which is induced by the change in flux corresponding to the disturbance.

4,316,147
APPARATUS FOR DETERMINING THE COMPOSITION OF MERCURY-CADMIUM-TELLURIDE AND OTHER ALLOY SEMICONDUCTORS

Muhammad A. Khan, Bloomington; Paul W. Kruse, Jr., and John F. Ready, both of Edina, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 3, 1980, Ser. No. 126,633
Int. Cl.³ G01N *27/00*
U.S. Cl. 324—300 **10 Claims**

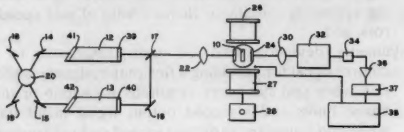
1. Apparatus for determining the composition of a quantity of mercury-cadmium-telluride, comprising:

means for producing a pair of colinear laser beams of different frequencies:

means for positioning a sample of mercury-cadmium-telluride having the formula $Hg_{1-x}Cd_xTe$;

means directing said beams onto said sample for passage therethrough to produce an emission beam resulting from four-photon mixing;

magnetic field means for producing a magnetic field at said sample and for varying the magnetic field from substantially below to substantially above the resonance field of



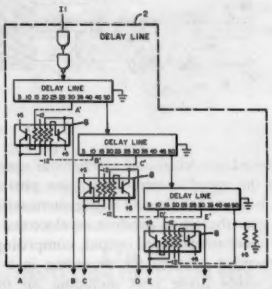
said sample to produce a four-photon mixing signal having a peak;

and, detector means receiving said emission beams to identify the resonance signal peak from which the spin-level splitting factor can be measured.

4,316,148
VARIABLE FREQUENCY LOGIC CLOCK

David G. Kaminski, Bloomington, Minn., assignor to Sperry Corporation, New York, N.Y.

Filed Sep. 4, 1979, Ser. No. 71,810
Int. Cl.³ H03K *3/017*
U.S. Cl. 328—55 **4 Claims**



1. A clock signal generator, comprising:

delay line means having an input terminal and a plurality of output terminals for producing a plurality of time variant output signals on said output terminals as an input signal propagates down said delay line;

a decoder comprising,

means for feedback coupling one of said output terminals to said input terminal, thereby producing a cyclical clock signal and

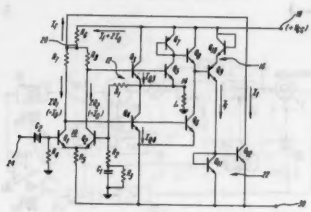
means for dividing the period of said cyclical clock signal into at least first and second time intervals; and

means for selectively controlling which of said output terminals is feedback coupled to said input terminal from cycle to cycle of said clock signal, thereby controlling the period of said clock signal and the duration of the first and second time intervals for each cycle of said clock signal.

4,316,149
POWER AMPLIFIER

Hiroyasu Yamaguchi, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Mar. 28, 1980, Ser. No. 135,128
Claims priority, application Japan, Mar. 31, 1980, 54-38637
Int. Cl.[3] H03F 3/26
U.S. Cl. 330—268 12 Claims

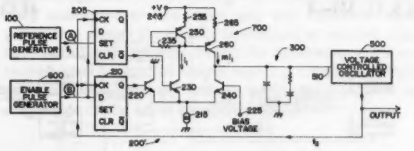


1. A power amplifier comprising:
(a) a preamplification stage;
(b) an output stage driven by said preamplification stage and having power transistors each coupled to a common output terminal;
(c) current detecting transistors connected in parallel at their base-emitter paths to the base-emitter paths of said power transistors for detecting currents flowing through said power transistors, respectively;
(d) an operating circuit coupled to said current detecting transistors, said operating circuit generating a feed back current which has a function related to the product of the respective currents through said power transistors; and
(e) means for feeding back said feed back current from said operating circuit to said preamplification stage for keeping said feed back current constant.

4,316,150
PHASE LOCKED LOOP INCLUDING PHASE DETECTOR SYSTEM CONTROLLED BY ENABLE PULSES

Philip S. Crosby, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Jan. 9, 1980, Ser. No. 110,561
Int. Cl.[3] H03L 7/08; H03K 5/26
U.S. Cl. 331—1 A 7 Claims



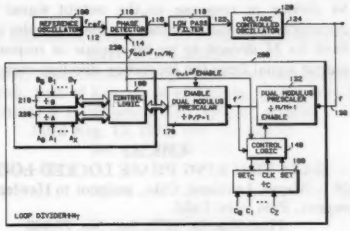
1. A system for providing a second signal at a second frequency in accurate-timed relation with a first signal at a first frequency, comprising:
controlled signal generating means for generating the second signal;
enable pulse generating means for generating an enable pulse independent of the second signal and in fixed phase relationship with said first signal; and
phase detecting means for comparing the first signal with the second signal and controlling said controlled generating means in response to the comparison for maintaining the second signal in accurate timed relation with the first signal, said phase detecting means being activated for the interval of the enable pulse from said enable pulse generating means.

5. A phase detector system for comparing the phase of a first signal at a first frequency with a second signal at a second frequency, comprising:
enable pulse generating means for generating an enable pulse;
a first flip-flop circuit having a clock input connected to receive the second signal, a D input to receive the output of said enable pulse generating means, a SET input connected to receive the first signal, and a Q output;
a second flip-flop circuit having a clock input connected to receive the second signal, a D input to receive the output of said enable pulse generating means, and a Q output;
current amplifying means for providing a switchable error current; and
switching means responsive to said Q and said Q outputs for switching said error current.

4,316,151
PHASE LOCKED LOOP FREQUENCY SYNTHESIZER USING MULTIPLE DUAL MODULUS PRESCALERS

William J. Ooms, Hazelcrest, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 13, 1980, Ser. No. 121,333
Int. Cl.[3] H03K 21/36; H03L 7/18
U.S. Cl. 331—1 A 9 Claims



1. An improved frequency synthesizer comprising:
(a) a reference signal source for generating a reference signal;
(b) a phase comparator, having a first input coupled to the signal source, a second input and an output, for producing at the output a control signal representative of the phase difference of signals received at the first and second input;
(c) a signal controlled oscillator for producing an oscillator signal of frequency f at its output in response to the phase comparator control signal; and
(d) divider means for frequency dividing the controlled oscillator signal by a divisor N_T and applying the divided signal to the second input of the phase comparator including,
first prescaler means for frequency dividing the controlled oscillator signal by one of two predetermined integer divisors M and M′ and producing a divided output signal,
means for counting the output signals from the first prescaler and producing an output signal when C signals have been counted when said counting means is enabled,
second prescaling means for frequency dividing the output signal of the first prescaling means by one of two predetermined integer divisors P and P′, and producing a divided output signal,
frequency dividing means, coupled to the second prescaler, for frequency dividing the output signal of the second prescaler to produce an output signal of frequency f/N_T at an output, and
means for controlling the first prescaler and the counting means such that the counting means is enabled when the first prescaler is dividing the input signal by M′ and

such that the first prescaler is actuated from its M' divisor to its M divisor in response to the output signal from the counter means, and such that the first prescaler is actuated from its M divisor to its M' divisor in response to the output signal of the frequency dividing means.

6. A high speed frequency divider responsive to a source of input signals of frequency f, comprising:

first prescaling means for frequency dividing the input signal by one of two predetermined integer divisors M and M' and producing a divided output signal;

means for counting the output signals from the first prescaler and producing an output signal when C signals have been counted when the counting means is enabled;

second prescaling means for frequency dividing the output signal of the first prescaling means by one of two predetermined integer divisors P and P' and producing a divided output signal;

frequency dividing means, coupled to the second prescaler, for frequency dividing the output signal of the second prescaler to produce an output signal of frequency F divided by N; and

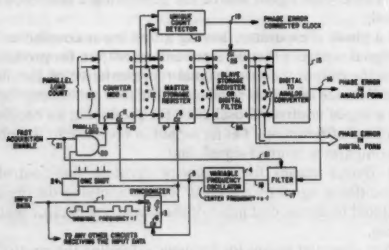
means for controlling the first prescaler and the counting means such that the counting means is enabled when the first prescaler is dividing the input signal by M', and such that the first prescaler is actuated from its M' divisor to its M divisor in response to the output signal from the counter means, and such that the first prescaler is actuated from its M divisor to its M' divisor in response to the output signal from the frequency dividing means.

4,316,152

DATA TRACKING PHASE LOCKED LOOP

Gerald L. Meyer, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 24, 1979, Ser. No. 77,980
Int. Cl.³ H03L *7/08*
U.S. Cl. 331—1 A **8 Claims**



7. A method of tracking phase variations in a data signal having a nominal frequency comprising the steps of:

counting by a modulus n the cycles of a variable frequency oscillation having a center frequency n times greater in frequency than the nominal frequency of the input data;

capturing the value of the count of the variable frequency oscillation each time a cycle of the input data occurs;

storing the captured value each time the count of the variable frequency oscillation attains a selected value between zero and n-1; and

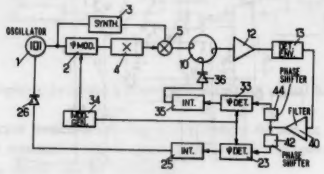
controlling in relation to the stored value the frequency at which the variable frequency oscillation occurs, such that increases in the captured value reduce the frequency of the variable frequency oscillation, and decreases in the captured value increase the frequency of the variable frequency oscillation.

4,316,153

PASSIVE MASERS HAVING OSCILLATOR AND CAVITY CONTROL LOOPS

Giovanni Busca, Neuchatel, and Helmuth-Hugo Brandenberger, Sugiez, both of Switzerland, assignors to Ebauches, S.A., Switzerland

Filed Feb. 5, 1980, Ser. No. 119,138
Claims priority, application France, Mar. 9, 1979, 79 06104
Int. Cl.³ H03L *7/26*
U.S. Cl. 331—3 **5 Claims**



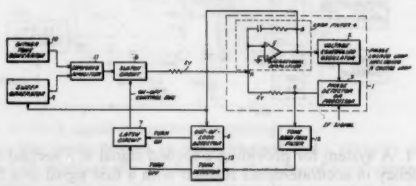
1. A process for controlling a passive maser having a resonant cavity which contains a medium capable of stimulated emission, and which is excited by an injected phase-modulated signal, comprising the steps of producing from a signal picked off from the cavity a first error signal representing the difference between the carrier frequency of the injected signal and the frequency of the stimulated emission, using the first error signal to adjust the said carrier frequency, producing from the picked-off signal a second error signal representing the difference between the resonance frequency of the cavity and the said carrier frequency, and using the second error signal to adjust the resonance frequency of the cavity, wherein the phase modulation of the injected signal is effected at a single frequency.

4,316,154

AUTOMATIC SWEEP AND ACQUISITION CIRCUIT FOR A PHASE LOCKED LOOP

Irving A. Krause, Nutley, N.J., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 7, 1980, Ser. No. 137,882
Int. Cl.³ H03L *7/00*
U.S. Cl. 331—4 **41 Claims**



1. An automatic sweep and acquisition circuit for a phase locked loop comprising:

first means coupled to said loop to detect an out-of-lock condition of said loop;

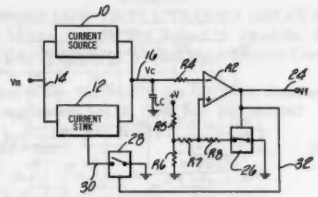
second means coupled to said loop and said first means responsive to said out-of-lock condition to inject a sweep voltage and a tone simultaneously into said loop; and

third means coupled to said loop and said second means to detect said tone indicating a locked condition of said loop and to disconnect said second means from said loop when said tone is detected.

4,316,155
VOLTAGE CONTROLLED OSCILLATOR HAVING RATIOMETRIC AND TEMPERATURE COMPENSATION

John C. P. Hanisko, Southfield, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Sep. 5, 1979, Ser. No. 72,799
Int. Cl.³ H03L 7/00
U.S. Cl. 331—18 8 Claims



1. A voltage controlled oscillator circuit for generating first and second level output signals dependent upon the magnitude of an input parameter signal and independent of supply voltage and temperature variations, said circuit comprising:

means adapted to receive a supply voltage of a single polarity;

timing means;

a voltage controlled current source responsive to the input parameter signal for charging said timing means at a rate proportional to the magnitude of the input parameter signal and ratiometrically with variations in said supply voltage for generating an increasing ramp of a sawtooth signal;

a voltage controlled current sink having substantially twice the current capacity of said current source and responsive to the input parameter signal and the second level output signal for controlling the discharging of said timing means at a rate proportional to the magnitude of the input parameter signal and ratiometrically with variations in said supply voltage for generating a decreasing ramp of a sawtooth signal;

threshold signal generating means responsive to the first level output signal for generating a first value threshold signal ratiometrically with variations in said supply voltage and including switch means responsive to the second level output signal for generating a second value threshold signal ratiometrically with variations in said supply voltage; and

a single comparator means having said timing means electrically connected to one input and said threshold signal generating means electrically connected to another input and operative in response thereto for generating a first and second level magnitude output signal at a frequency independently of said supply voltage and dependent upon the magnitude of the input parameter signal.

4,316,156
OPTICAL REPEATER INTEGRATED LASERS

Donald R. Scifres, Los Altos; William Streifer, Palo Alto, and Robert D. Burnham, Los Altos Hills, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 12, 1979, Ser. No. 56,765
Int. Cl.³ H01S 3/19
U.S. Cl. 372—50 5 Claims

1. In a plural layer semiconductor diode laser which is electrically biased to the point wherein light input causes the laser to commence lasing such that the improvement is characterized by:

a first substrate layer (1) of a semiconductive crystal,

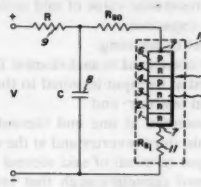
a second layer (2) of a semiconductive crystal with a predetermined bandgap,

a third layer (3) of a semiconductive crystal with a bandgap relatively smaller than that of said second layer,

a fourth layer (4) of a semiconductive crystal with a bandgap similar to that of said second layer,

a fifth layer (5) of a semiconductive crystal with a bandgap between that of said second layer and said third layer,

a sixth layer (6) of a semiconductive crystal with a bandgap similar to that of said second layer,

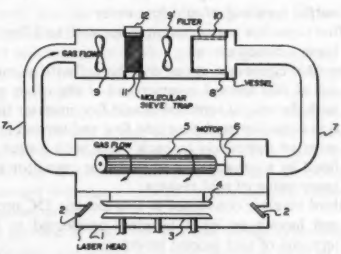


wherein when said electrical bias (V) is slightly less than the breakdown voltage of the back biased junction between the fourth and fifth layers thereof, and external light (8, 9) is supplied to the fourth or fifth layers, said back biased junction between said fourth and fifth layers becomes forward biased so as to stimulate the emission of laser light from the third layer.

4,316,157
GAS RECIRCULATION SYSTEM FOR CARBON DIOXIDE LASERS

Mahendra K. Dosi, Ottawa; Douglas J. James, and Anthony W. Pasternak, both of Kanata, all of Canada, assignors to Canadian Patents & Development Ltd., Ottawa, Canada

Filed Aug. 13, 1979, Ser. No. 66,176
Int. Cl.³ H01S 3/14
U.S. Cl. 372—59 11 Claims



1. In a method of operating a laser with a gas mixture having CO_2 within the laser, wherein the CO_2 dissociates to produce O_2, the steps including:

(a) adding a reducing gas to the gas mixture to produce an oxygen-product with the O_2 within the laser; and

(b) removing the oxygen-product from the laser.

4,316,158
R-C OSCILLATORS USING PLURAL INVERTERS

Sigeyuki Akita, and Hiroaki Tanaka, both of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jan. 7, 1980, Ser. No. 109,916
Claims priority, application Japan, Jan. 17, 1979, 54-4650
Int. Cl.³ H03K 3/03, 3/354
U.S. Cl. 331—111 9 Claims

1. In an oscillator circuit including:

a first inverter connected to an electric DC power source;

a second inverter connected to said electric DC power source and having an input terminal connected to an output terminal of said first inverter;

a resistor connected in series with said first inverter to form a closed circuit; and

a capacitor connected at one end thereof with an output terminal of said second inverter and at the other end thereof with the output terminal of said first inverter through said resistor such that said first and second inverters are inverted opposite to each other with a time period defined by a resistance value of said resistor and a capacitance of said capacitor;

the improvement comprising:

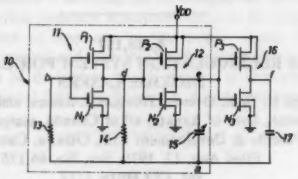
a third inverter connected to said electric DC power source and connected at its input terminal to the output terminal of said second inverter; and

a capacitor connected at one end thereof with an output terminal of said third inverter and at the other end thereof with the output terminal of said second inverter through said first-named capacitor such that said second-named capacitor is biased by an inverter function of said third inverter in voltage polarity opposite to that of said first-named capacitor.

6. An oscillator circuit comprising:

a first inverter connected to an electric DC power source;

a second inverter connected to said electric DC power



source and having an input terminal connected to an output terminal of said first inverter;

a first capacitor connected in series with said first inverter to form a closed circuit;

a resistor connected at one end thereof with an output terminal of said second inverter and at the other end thereof with the output terminal of said first inverter through said first capacitor such that said first and second inverters are inverted oppositely to each other with a time period defined by a capacitance of said first capacitor and a resistance value of said resistor;

a third inverter connected to said electric DC power source and having an input terminal connected to the output terminal of said second inverter;

a fourth inverter connected to said electric DC power source and having an input terminal connected to an output terminal of said third inverter; and

a second capacitor connected at one end thereof with an output terminal of said fourth inverter and at the other end thereof with the output terminal of said second inverter through said resistor such that said second capacitor is biased by each inverter function of said third and fourth inverters in voltage polarity opposite to that of said first capacitor.

4,316,159

REDUNDANT MICROWAVE SWITCHING MATRIX

Pang T. Ho, Mountain View, Calif., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 22, 1979, Ser. No. 5,385

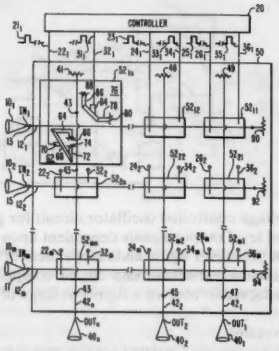
Int. Cl.³ H01P *1/15;*

U.S. Cl. 333—104 **5 Claims**

1. A redundant microwave switching matrix that distributes the power from a plurality of input microwave signals equally to a plurality of output paths, said matrix comprising:

a plurality of strip transmission lines spaced from each other and arranged in rows and columns, the crossings of which form coordinates of said matrix;

a pair of controllable microwave power couplers positioned diametrically opposite each other at each coordinate of said matrix, each of said power couplers responsive to a control signal for coupling according to a given power ratio a given amount of power of said input signal propagating along an associated row oriented transmission line



to an associated column oriented transmission line and responsive to the absence of said control signal for interrupting said coupling, said power ratio being greater than zero and being the same for all couplers; and

means for providing said control signal to either one of said pair of power couplers whereby in the event of failure of one of the pair of power couplers at any coordinate the other power coupler at that coordinate provides the coupling at the same power ratio.

4,316,160

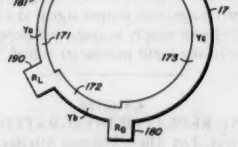
IMPEDANCE TRANSFORMING HYBRID RING

Michael Dydyk, Scottsdale, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Jul. 28, 1980, Ser. No. 173,239

Int. Cl.³ H01P *5/22;* H03F *3/60*

U.S. Cl. 333—120 **12 Claims**



1. An impedance matching hybrid ring having a selectable power division ratio, K, between output ports comprising:

a first and a second input port;

a first and a second output port;

a non-uniform impedance ring further comprising:

a first quarter wavelength ring section having a characteristic admittance Y_a;

second and third quarter wavelength ring sections each having a characteristic admittance Y_b;

a three-quarter wavelength section having a characteristic admittance Y_c, said first quarter wavelength section being located between said first input port and said first output

port, said second quarter wavelength section being located between said second input port and said first output port, said third quarter wavelength section being located between said first input port and said second output port, said three-quarter wavelength section being located between said second input port and said second output port; and wherein Y_a is not equal to Y_c.

4,316,161

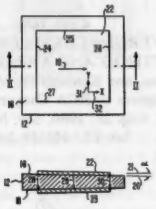
WIDEBAND LOW TRIPLE TRANSIT DELAY LINE

Robert A. Moore, Arnold, and Robert N. Sundelin, Hanover, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 56,372, Jul. 10, 1979, abandoned. This application Sep. 8, 1980, Ser. No. 185,043

Int. Cl.³ H03H *9/36, 9/125*

U.S. Cl. 333—141 16 Claims



1. Electroacoustic apparatus for delaying signals and for providing wideband triple transit suppression about a predetermined center frequency comprising:

a substrate having an upper and lower surface, said substrate comprised of material suitable for propagating bulk acoustic waves,

a first transducer mounted on said upper surface for generating bulk acoustic waves toward said lower surface,

a second transducer mounted on said lower surface and positioned for receiving bulk acoustic waves from said first transducer,

said first and second transducers having a plurality of spacings between each other, and having a maximum spacing between themselves which is less than $2d^2/3\lambda$ where d is the maximum width of one side of said first transducer and λ is the wavelength of the ultrasonic elastic wave in the transmission medium at said predetermined center frequency.

4,316,162

MAGNETOSTATIC WAVE DEVICE CONTAINING ATTENUATION MEANS AND THE WAY OF MAKING IT

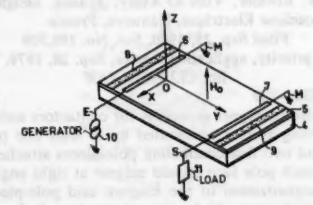
Gerard Volluet, and Daniel Cohen, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jun. 2, 1980, Ser. No. 155,676

Claims priority, application France, Jun. 6, 1979, 79 14439

Int. Cl.³ H03H *2/00*

U.S. Cl. 333—201 11 Claims



1. A magnetostatic wave device comprising attenuator means localized on a ferrimagnetic substrate for receiving the magnetostatic waves coming from transducers formed by thread-like filamentary electrodes; said attenuator means including at least one area in which the attenuation has been considerably increased by a local treatment that produces defects in the surface of said substrate resulting from the impacts by local action of a jet of abrasive particles.

4,316,163

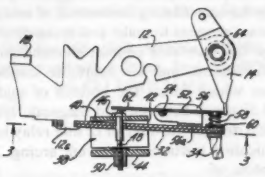
THERMAL-MAGNETIC CIRCUIT BREAKER

Nilendu Roy, Stafford, and Arnold Horton, Essington, both of England, assignors to Federal Pacific Electric Company, Newark, N.J.

Filed Jun. 22, 1978, Ser. No. 910,786

Int. Cl.³ H01H *75/12*

U.S. Cl. 335—37 2 Claims



1. A circuit breaker of the type having a case of molded insulation and a mechanism including:

a pivoted unit mainly comprising an elongated contact arm having a pivotal support between the ends thereof and having a movable contact at one end thereof, an actuator pivoted to the opposite end of the contact arm, and an overcurrent release device constituting latching means for said pivoted actuator, said release device including a short-circuit responsive electromagnet and an elongated overcurrent responsive bimetal fixed at one end thereof to the contact arm,

a handle pivoted in said case and link means articulated to said actuator and acting with said handle to form an operating toggle for said pivoted unit,

an opening spring biasing the contact arm in the opening direction and,

a companion contact engageable by said movable contact when the handle is operated to close the circuit breaker,

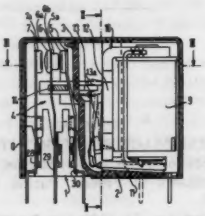
that improvement wherein said electromagnet comprises a core and an armature encircling the bimetal, said core being fixed to said pivoted unit adjacent said fixed end of the bimetal, means supporting said armature at the side of the bimetal remote from the contact arm and said supporting means limiting the gap between said core and said armature, and a medially pivoted latch lever carried by said bimetal and disposed between the bimetal and the contact arm, one end of the latch lever acting as a latch normally obstructing said actuator and the opposite end of the latch lever being operated by said armature all arranged so that overcurrent in the bimetal causes displacement of the pivot and the latch end of the latch lever to release the actuator and so that short-circuit current in the bimetal causes pivoting of the latch lever to release the actuator.

4,316,164

ELECTROMAGNETIC RELAY WITH SNAP-IN YOKE

Richard Essler, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 14, 1980, Ser. No. 121,423
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1979, 7909135[U]
Int. Cl.³ H01H 50/02
U.S. Cl. 335—202 5 Claims



1. In an electromagnetic relay having a magnetic system energizable in response to a received signal, a yoke-and-armature assembly for transmitting movement of said armature to a movable contact element to make and break electrical connections between said movable contact element and at least one fixed contact element, and an insertable insulating member having a base which forms the bottom of said relay and a vertical wall disposed between said magnetic system and said contacts which divides the interior of said relay into essentially non-communicating portions to prevent arcing therebetween, the improvement of:

a pair of opposed lateral parallel walls disposed in orthogonal relation to said vertical wall and said base which partially surround said magnetic system, at least one of said lateral walls having at least one recess therein extending through said one of said walls; and

a yoke for said yoke-and-armature assembly having a downwardly extending generally vertical leg,

at least one projection extending from a side of said leg, said projection in registry with and received in said recess in said lateral wall to position and support said leg, said recess having greater vertical dimensions than said projection received therein to permit limited vertical movement of said projection within said recess,

said yoke connected to said plunger such that positioning of said projection within said recess positions the entire magnetic system within said relay.

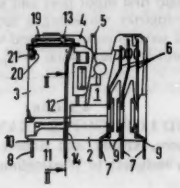
4,316,165

ELECTROMAGNETIC RELAY WTH ADD-ON CONDUCTOR CAPABILITY

Helmut Moeller, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 16, 1980, Ser. No. 112,457
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1979, 7909155[U]
Int. Cl.³ H01H 9/12
U.S. Cl. 335—202 7 Claims

1. An electromagnetic relay, comprising: an insulating material base member which forms a base; the base member bearing an armature magnet system with coil, yoke and armature as well as coil winding and contact connecting pins guided through perforations of the base to a connection side of the relay base; a protecting cap encompassing the relay; and an additional connection conductor electrically connected with the yoke positioned on the magnet system along an interior side wall of the protecting cap to and within a groove at an exterior side edge of the base which corresponds at least to a thickness of the connection conductor, and also along the



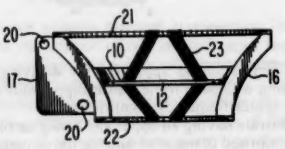
connection side of the base to a connection pin pattern point and there is bent to form a connection pin.

4,316,166

SELF-CONVERGING DEFLECTION YOKE AND WINDING METHOD AND APPARATUS THEREFOR

George A. Simmons, and Kenneth W. McGlashan, both of Lancaster, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 28, 1980, Ser. No. 181,997
Int. Cl.³ H01H 1/00
U.S. Cl. 335—213 3 Claims



1. A winding form for use in toroidally winding about a core a deflection coil having a double bias configuration, said form insertable into said core and comprising:

a ring-shaped base dimensioned to be positioned within the interior of said core;

a plurality of spacing members extending radially inward from said base; and

a pair of removable guide members, coupled to said spacing members, each of said guide members forming a pair of circumferentially extending channels between said guide members and said base, said channels dimensioned to receive the wire turns of said toroidally-wound deflection coil, said guide members removable from said spacing members upon completion of the winding of said deflection coil.

4,316,167

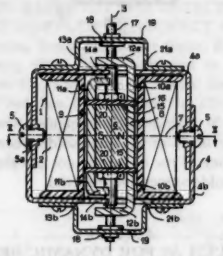
ELECTROMAGNET WITH A MOVING SYSTEM AND PERMANENT MAGNET, ESPECIALLY FOR CONTACTORS

Gerard N. Koehler, Ville D'Avray, France, assignor to La Telemecanique Electrique, Nanterre, France

Filed Sep. 25, 1980, Ser. No. 190,509
Claims priority, application France, Sep. 28, 1979, 79 24147
Int. Cl.³ H01F 7/08
U.S. Cl. 335—229 10 Claims

1. An electromagnet especially for contactors and comprising a moving system constituted by at least one permanent magnet and two flux-conducting pole-pieces attached respectively to each pole face of said magnet at right angles to the axis of magnetization of the magnet, said pole-pieces being provided with arms which project from the pole faces, at least one of the pole-pieces being provided with arms whose ends are bent back at right angles so as to define two air-gap zones with at least one arm of the other pole-piece, said air-gap zones

being adapted to cooperate with a yoke mounted on a coil unit which cooperates magnetically with the magnet, said air-gap zones being located on each side of the magnetization axis, wherein said moving system is placed within the interior of the coil unit, guiding means being provided so as to permit translational displacement of said system along the axis of the coil unit in such a manner as to constitute a sliding armature, wherein the space inside the coil unit has a substantially rectangular cross-section occupied by the magnet and the pole-pieces, the



axis of magnetization being perpendicular to the axis of the coil unit, wherein the air-gap zones are located at the two ends of the coil unit, and wherein the stationary yoke surrounds the two ends of the coil unit, flat portions of the yoke which are parallel to the axis of magnetization being each adapted to penetrate respectively into one air-gap zone so that, in at least one stable position of the armature, one flat portion of the yoke is in contact with one of the pole-pieces whilst the other flat portion is in contact with the other pole-piece.

4,316,168
ELECTRICAL CIRCUIT BREAKER HAVING A BIMETAL PLATE MEMBER OF RECTANGULAR CONFIGURATION

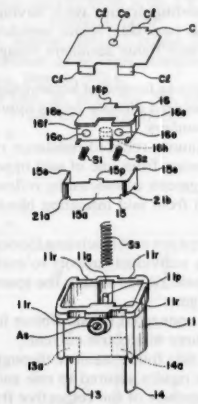
Junichi Nakaho, Ichinomiya, and Takao Ougimoto, Gifu, both of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishi, Japan

Filed Oct. 6, 1980, Ser. No. 194,276

Claims priority, application Japan, Oct. 12, 1979, 54-141921[U]

Int. Cl.³ H01H *37/52, 37/74*

U.S. Cl. 337—359 **11 Claims**



1. An electrical circuit breaker which comprises a housing having a plurality of terminal plates fixed therein, a bimetal plate member of approximately rectangular configuration having, at opposite ends on one surface thereof, corresponding contacts respectively contacting said terminal plates, a holder member holding said bimetal plate member so as to apply contact pressure to portions on the other surface of the bimetal plate member corresponding to said contacts and reciprocatingly movable in a direction normal to the direction of application of said contact pressure, engaging means which is arranged to be engaged with said bimetal plate member during flowing of rated current for retaining said bimetal plate member in position to electrically connect said terminal plates and to be disengaged from said bimetal plate member through deflection of said bimetal plate member upon flowing of overcurrent, and spring means which normally urges the holder member in one direction and which, upon disengagement between the engaging means and bimetal plate member, causes the bimetal plate member to move in the one direction together with the holder member for cutting off electrical connection between said terminal plates, said bimetal plate member, holder member, engaging means and spring means being operably accommodated in said housing.

4,316,169
WINDINGS FOR ELECTRICAL INDUCTIVE APPARATUS

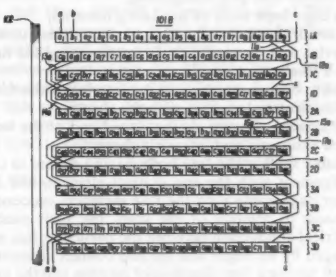
Tsuneharu Teranishi, and Takeshi Higuchi, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 18, 1980, Ser. No. 207,998

Claims priority, application Japan, Nov. 19, 1979, 54-148837

Int. Cl.³ H01F *15/14*

U.S. Cl. 336—70 **7 Claims**



1. A winding for electrical inductive apparatus, comprising:

a plurality of first pairs of disc coil sections, each of said plurality of first pairs of sections including a first section and a second section arranged in a stack;

a plurality of second pairs of disc coil sections, each of said plurality of second pairs of sections including a third section and a fourth section arranged in said stack;

wherein each of said second pairs of disc coil sections are disposed between said first pairs of disc coil sections;

wherein each of said first, second, third and fourth sections include two conductors wound in parallel with each other;

wherein each of two conductors at an inner end of said first section are connected to each of two conductors at an inner end of said third section, respectively;

wherein each of two conductors at an inner end of said second section are connected to each of two conductors at an inner end of said fourth section, respectively;

wherein a first conductor at an outer end of said third section is connected to a first conductor at an outer end of said second section;

wherein a second conductor at the outer end of said third section is connected to a first conductor at an outer end of

a first section in a first pair of disc coil sections disposed adjacent to said second pair of disc coil sections;

wherein a first conductor at an outer end of said fourth section is connected to a second conductor at the outer end of said adjacently disposed first section; and

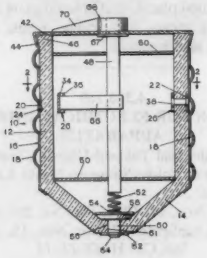
wherein a second conductor at the outer end of said fourth section is connected to a first conductor at an outer end of a second section in said adjacently disposed first pair of disc coil sections.

4,316,170

SELECTOR FUSE

Edgar H. Smyth, Box 49245, Chicago, Ill. 60649

Filed Feb. 15, 1980, Ser. No. 122,236
Int. Cl.³ H01H *85/22*
U.S. Cl. 337—257 **5 Claims**



1. A selector fuse plug comprising,

a main cup-shape body of insulating material,

an external sheath on the body, of electrical conducting material, and forming threads for threading the fuse plug into a fuse socket,

a plurality of fuse members in the interior of the fuse body and in electrical contact with the sheath,

an end contact element on the closed end of the body, exposed exteriorly and interiorly thereof,

a rotatable shaft in the fuse body having an end in constant engagement with the end contact element, and a radiai finger engageable with the fuse members successively in response to rotation of the shaft, the shaft establishing electrical conduction between the particular fuse member engaged by its finger and the end contact element,

the shaft having a first direction of rotation and the extended end of the radial finger moving through a predetermined ambit, and

the fuse members being constituted by spring fingers fixedly secured at one end in the wall of the body and having a free end extending generally circumferentially in said first direction of rotation, and projecting within said ambit, whereby the outer end of the radial finger necessarily engages each fuse member upon rotation of the shaft, and the fuse members yield pursuant to rotational engagement by the radial finger but are biased into constant engagement with the radial finger.

4,316,171

NON-LINEAR RESISTANCE ELEMENTS AND METHOD FOR MANUFACTURING SAME

Susumu Miyabayashi, Misatoshi, and Takeyuki Kaji, Nikaho, both of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

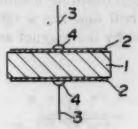
Filed Feb. 1, 1980, Ser. No. 117,817
Claims priority, application Japan, Feb. 9, 1979, 54-13869
Int. Cl.³ H01C *7/10*
U.S. Cl. 338—21 **8 Claims**

1. A non-linear resistance element which comprises

(a) a sintered body mainly composed of titanium dioxide,

(b) at least one electrode made of a metallic material and bonded to the surface of the sintered body forming ohmic contact therewith,

(c) a layer of a first solder-receptive metallic material covering at least part of the outer surface of the electrode, and



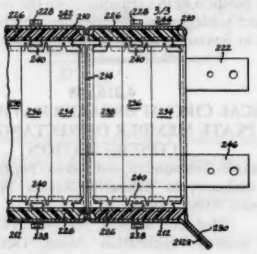
(d) a layer of a second solder-receptive metallic material covering the layer of the first solder-receptive material and the surface of the electrode not covered by the layer of the first solder-receptive material.

4,316,172

RESISTOR SUCH AS FOR DYNAMIC BRAKING OF ELECTRIC MOTORS

William R. Luy, Colgate, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 25, 1980, Ser. No. 162,964
Int. Cl.³ H01C *3/00*
U.S. Cl. 338—280 **2 Claims**



1. A resistor, such as for use in dynamic braking of electrical motors, comprising in combination:

a pair of supporting frames each having two end frame members and two side frame members connected together, said end frame members being parallel to each other;

like insulating blocks formed of hot-molded organic material immovably secured directly to the opposing faces of said end frame members;

a layer of continuous reflexed resistance ribbon comprising segments running from one of said opposing faces to the other, said segments connected by reflexes in proximity to but separated from said insulating blocks in each of said frames;

support clips between said insulating blocks and said reflexes for providing individual support to each of said reflexes and holding said ribbon within the space defined by said supporting frame;

terminal means connected to said ribbon for connecting the latter to a source of electric current;

flanges on said side frame member through which said pair of frames are rigidly secured to one another so that said end frame members of the respective frames are in abutting relation;

and lateral ridges on said insulating blocks overlying the edges of the associated end frame members to prevent conductive material from being lodged therein and short-

circuiting said resistor ribbon to said end frame member, and said ridges on the insulating blocks of adjacent connected frames being in close proximity to one another to prevent conductive material from falling therebetween into short-circuiting contact with said end frame members.

4,316,173

DOPPLER RADAR VEHICLE SPEED SENSING SYSTEM INCLUDING MEANS FOR CHECKING SYSTEM OPERATION BASED ON THE DETECTION OF LOW FREQUENCY DOPPLER FREQUENCY COMPONENTS

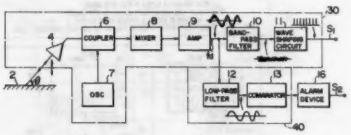
Akira Matsumura, Yokosuka; Akira Endo, Katsuta, and Kenji Sekine, Tokyo, all of Japan, assignors to Hitachi, Ltd and Nissan Motor Co., Ltd., both of Tokyo, Japan

Filed Jun. 5, 1980, Ser. No. 156,814

Claims priority, application Japan, Jun. 15, 1979, 54-74725

Int. Cl.³ G08G *29/00*; G01S *7/40*

U.S. Cl. 340—32 **4 Claims**



1. A vehicle speed sensing apparatus with means for checking its operation, comprising:

a Doppler radar unit on a vehicle for directing RF energy to a surface over which a vehicle travels and receiving reflected RF energy from the surface to produce a Doppler signal related to the speed of the vehicle, the unit including a circuit for producing a speed signal from the Doppler signal;

means connected with the radar unit for extracting from the Doppler signal low frequency components the frequencies of which are lower than such a Doppler signal frequency which corresponds to a minimum vehicle speed, said low frequency components being representative of vehicle motion in a direction substantially vertical to the vehicle travel surface; and

safety means connected with said extracting means for producing an operation check signal.

4,316,174

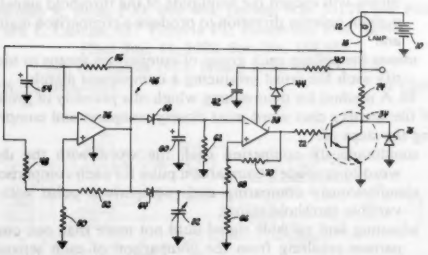
THRESHOLD DETECTOR FOR A CONDITION INDICATION

Stephen J. Sutton, Fenton; John E. Creager, Linden, and Robert B. Gelenius, Davison, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 26, 1979, Ser. No. 106,932

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—52 R **2 Claims**



1. A threshold detector for providing an indication of a predetermined condition in an automotive vehicle having an electrical power supply grounded to the vehicle and subject to voltage changes throughout a large range, the detector comprising;

an incandescent indicating lamp having a first terminal connected to the power supply and located in view of a vehicle operator, the lamp having the property of decreased resistance when the voltage applied thereacross is decreased,

an electronic detection circuit grounded to the vehicle and containing components operable at voltages substantially below the low end of the power supply voltage range and located remotely from the indicating lamp for sensing the said condition and producing a lamp energizing signal when the predetermined condition is detected,

a single conductor connected between a second terminal of the lamp and the detection circuit to connect the detection circuit in series with the lamp for supplying operating voltage to the detection circuit and for carrying the lamp energizing signal to the lamp, thereby serially connecting the power supply and the lamp to the detection circuit by a single conductor,

whereby when the lamp is energized, any decrease of power supply voltage is partially offset by an accompanying lamp resistance decrease to partially regulate the operating voltage supplied to the detection circuit to maintain the operating voltage at an adequate level when the power supply voltage is at a low level.

4,316,175

METHOD FOR THE ADVANCE INDICATION OF DAMAGE TO WHEEL BEARINGS

Joachim Körber, Weinheim an der Bergstrasse; Günter Bange, Mannheim; Walter Poll, Sennfeld; Volker Bensberg Kaltenbach, and Hans Pittroff, Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

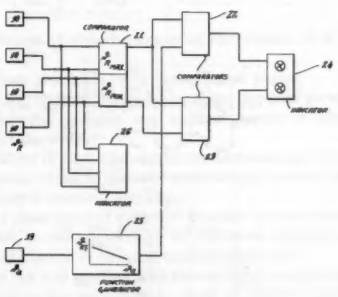
Continuation-in-part of Ser. No. 912,345, Jun. 5, 1978, which is a continuation of Ser. No. 710,387, Aug. 2, 1976, abandoned.

This application Jun. 29, 1978, Ser. No. 920,147

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1977, 2703071; Austria, Jan. 12, 1978, 226

Int. Cl.³ G01K *7/16*; G08B *21/00*

U.S. Cl. 340—57 **26 Claims**



1. In a method for advance indication of the possibility of damage occurring to wheel bearings of vehicular means having a plurality of wheels, including the steps of monitoring the temperature of the wheel bearings with temperature detectors fixedly mounted at the wheel bearings, and producing indication signals when a temperature detected by a temperature detector exceeds a determinable value; the improvement wherein said step of monitoring comprises monitoring the temperature of a plurality of wheel bearings of said vehicular means, deriving a selected value from said plurality of monitored temperatures, obtaining, as an inverse function of ambi-

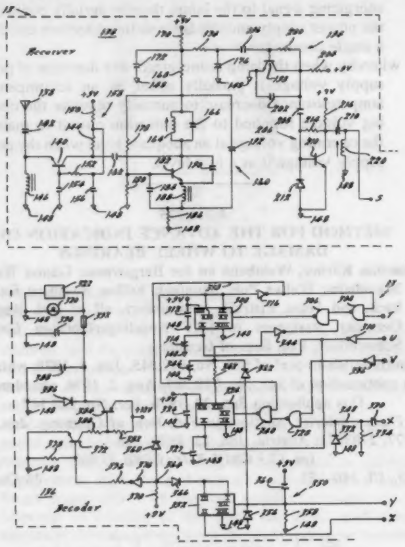
ent a further temperature reference value of said vehicular means monitored by one temperature detector mounted on said vehicular means spaced from wheel bearings thereof, and comparing said derived selected value with said further temperature reference value to produce said advance indication signal.

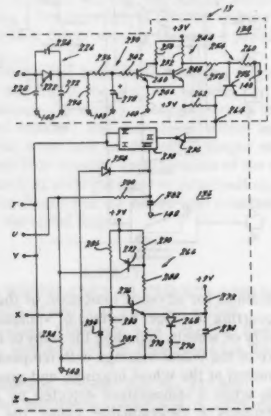
4,316,176

TIRE PRESSURE MONITOR AND SELF CHECK SYSTEM THEREFORE

Thomas A. Gee, Allen Park, and Joseph A. Tremba, Farmington Hills, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 26, 1979, Ser. No. 106,783
Int. Cl.³ B60C *23/02*; G08B *21/00*
U.S. Cl. 340—58 **29 Claims**





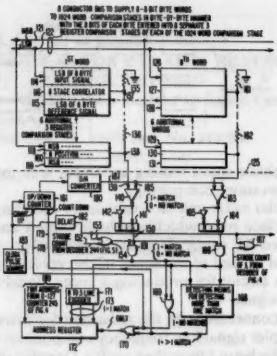
1. A tire pressure monitoring system comprising:
radio transmitter means operative to monitor fluid pressure within a pneumatic tire and to generate a uniformly timed succession of tire inflation condition signals when said pressure falls within a predetermined operating range; and
means operative to receive and count said tire condition signals and to generate an operator alerting signal when less than a predetermined number of said tire condition signals are received during a preestablished increment of time.

4,316,177

DATA CLASSIFIER

Daniel Hampel, Westfield, and Kalman J. Prost, East Windsor, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 3, 1979, Ser. No. 99,323
Int. Cl.³ G06F *7/34*; G05B *7/03*
U.S. Cl. 340—146.2 **11 Claims**



1. A system for classifying digitized data words into one or more of several categories each defined by a group of digitized file words and comprising:
a plurality of groups of comparison means with each group constructed to compare each received data word with each file word in a different one of said groups of file words to produce comparison pulses in response to each comparison of said received data word with a file word;
means for generating a variable threshold signal;
means for comparing each comparison pulse with said threshold signal;
means responsive to said threshold signal and each of said comparison pulses individually to change the amplitude of said threshold signal to a value at which not more than one comparison pulse from each group of comparison means will exceed the amplitude of the threshold signal in a given polarity direction to produce a comparison match; and
means for polling each group of comparison means to identify each file word producing a comparison match.

10. A method for determining which of a plurality of groups of file words a data word most closely compares and comprising the steps of:
simultaneously comparing each file word with the data word to produce a comparison pulse for each comparison:
simultaneously comparing each comparison pulse with a variable threshold signal;
adjusting said variable signal until not more than one comparison resulting from the comparison of each separate group of file words with the data word exceeds the variable threshold signal in a given polarity direction; and
polling the comparison pulses of each group of file words to

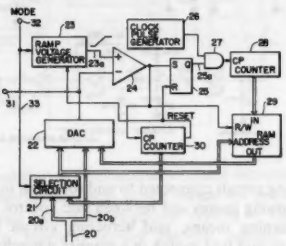
identify which of said file words produce one of said one comparison pulses.

4,316,178

DIGITAL-TO-ANALOG CONVERSION SYSTEM WITH COMPENSATION CIRCUIT

Akinori Shibayama, Tokyo; Kenji Maio, Hinode; Masao Hotta, Hachioji, and Norio Yokozawa, Huchu, all of Japan, assignors to Nippon Telegraph & Telephone Public Corp. and Hitachi, Ltd., both of Tokyo, Japan

Filed Jan. 21, 1980, Ser. No. 113,674
Claims priority, application Japan, Jan. 29, 1979, 54/8231
Int. Cl.[3] H03K *13/02*
U.S. Cl. 340—347 DA 7 Claims



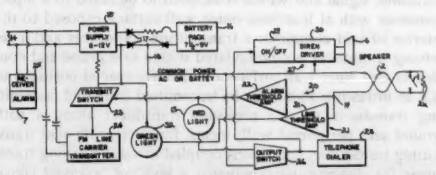
1. A digital-to-analog converter system comprising selection means responsive to a selection signal to apply to an output thereof either a digital signal to-be-converted or a digital input signal, conversion means to convert into an analog signal the digital signal at the output of said selection means, arithmetic means connected to receive said analog signal for generating signal quantities corresponding to an error in the analog signal produced by said conversion means, memory means to store said signal quantities corresponding to such errors at locations designated by the digital output of said selection means, and means for reading out said signal quantities from said memory means and for applying the read out signal quantities to said conversion means when the selection signal effects application of the digital signal to-be-converted to said conversion means; said arithmetic means including first generation means for generating a ramp voltage, second generation means for generating a clock pulse signal, first counting means for counting said clock pulse signal, comparison means for comparing the ramp voltage to the analog output of said conversion means and for generating an output pulse each time the absolute value of the ramp voltage becomes greater than the absolute value of said analog signal of said conversion means and second counting means driven by said output pulses for producing said digital input signal.

4,316,179

FIRE DETECTION SYSTEM

Timothy R. Bliss, P.O. Box 466, Darien, Wis. 53114, and Richard T. Canepa, 837 Victoria Pl., Janesville, Wis. 53545

Filed Jun. 11, 1980, Ser. No. 158,465
Int. Cl.[3] G08B *1/08;* H04Q *1/30;* G08B *17/06*
U.S. Cl. 340—538 1 Claim



1. A fire detection system for use in a barn or like enclosure having electrical appliances and an electrical service panel providing electrical power to the structure, said system comprising:

a. means for sensing rate of rise of heat in the barn;

b. heat detecting cable for sensing a predetermined temperature in the barn said cable being located in the vicinity of the electrical service panel and the electrical appliances;

c. control means operably connected to said rate of rise sensor and said heat detecting cable whereby upon detection of a predetermined rate of rise or a predetermined temperature said control means produces an output signal;

d. a first audible warning device for mounting outside of the barn, said first warning device operable by said output signal produced by said control means;

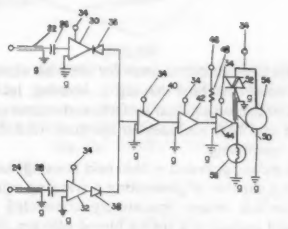
e. a second warning device for mounting in a structure remote from the barn; said second warning device comprising a FM signal receiving unit adapted for plugging into an electrical outlet of the electrical power lines servicing the structure and the barn whereby said second warning device may be moved to any room having an electrical outlet in said structure said second warning device operable by an FM signal produced by said control circuitry and transmitted to the power lines.

4,316,180

DIRECTIONAL DETECTOR OF CHANGES IN A LOCAL ELECTROSTATIC FIELD

Francis E. LeVert, 7233 S. Luella, Chicago, Ill. 60649

Filed Apr. 9, 1979, Ser. No. 28,247
Int. Cl.[3] G08B *13/26;* G01R *29/12*
U.S. Cl. 340—562 1 Claim



1. A detector of disturbances in an electrostatic field comprising:

a first flat coil antenna with two terminal points;

a first plane sheet of electrical insulator disposed parallel to the flat coil antenna and bonded thereto in physical contact therewith;

a plane sheet of electrical conductor disposed parallel to the first plane sheet of insulator material and bonded thereto in physical contact therewith;

a second plane sheet of electrical insulator material disposed parallel to the plane sheet of electrical conductor and bonded thereto in physical contact therewith;

a second flat coil antenna with two terminal points disposed parallel to the second plane sheet of electrical insulator material and bonded thereto in physical contact therewith;

means of electrically connecting the plane sheet of electrical conductor to an electrical ground thereby electrostatically decoupling the two parallel flat coil antennas;

means of completing an electrical circuit between one terminal point of each of the flat coil antennas and two separate electrical input channels of a typical signal conditioning circuit and for completing a electrical connection between the remaining terminal points of both antennas to an electrical ground;

means of, within the signal conditioning circuit of, using the

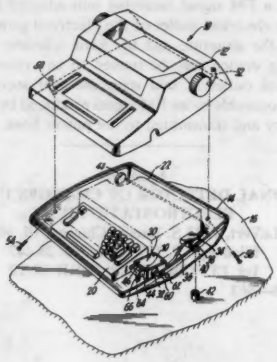
induced electrical current in either of the flat coil antennas as a reference current source; and

means of electrically connecting the output of a typical conditioning circuit to an ordinary enunciator unit.

4,316,181
THEFT PREVENTION SYSTEM FOR BUSINESS MACHINES

James Primont, 205 Ramapo Ave., Staten Island, N.Y. 10309; Joseph Williams, 11 Greencroft Ave., Staten Island, N.Y. 10308, and Paul Zazzera, Jr., 641-90th St., Brooklyn, N.Y. 11228

Filed Nov. 17, 1980, Ser. No. 207,454
Int. Cl.³ G08B *13/14*
U.S. Cl. 340—571 **14 Claims**



1. A theft prevention system for use with a business machine, said business machine having a housing including a base, adapted to rest on a planar surface, and a removable cover, and wherein said base includes an aperture, said theft prevention system comprising:

alarm means disposed within said housing, said alarm means being capable of generating a warning signal;

first switch means operatively connected to said alarm means and including a spring biased plunger, said first switch means being disposed such that said plunger projects downwardly through said aperture provided in the base of said housing, said plunger being in abutting contact with said planar resting surface such that said plunger is biased into an upward inactive position whereby when said housing is lifted upwardly from said planar surface, said plunger is biased downwardly actuating said alarm means thereby generating a warning signal; and

guard means associated with said first switch means, said guard means including an elongated protective sleeve with one distal end thereof fixedly connected to said planar surface and with the other distal end thereof projecting upwardly into said aperture of said base and surrounding said plunger whereby said plunger is shielded from manipulation.

4,316,182
VENTILATOR DISCONNECTION ALARM

William R. Hodgson, 36 Ashley St., Chatswood, New South Wales, Australia

Filed Feb. 27, 1980, Ser. No. 125,766
Claims priority, application Australia, Feb. 28, 1979, PD7858
Int. Cl.³ G08B *21/00*; A61M *16/00*
U.S. Cl. 340—606 **6 Claims**

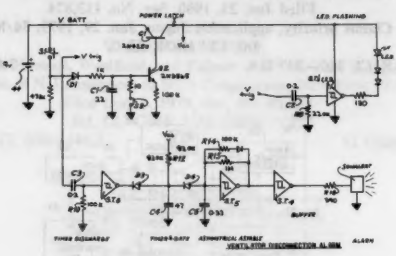
1. A ventilator disconnection alarm for monitoring a patient connected to a ventilator, said ventilator disconnection alarm comprising

warning means for producing an audible warning;

a source of power;

a first switch operated by each breath delivered to a patient connected to the ventilator;

a control circuit including said first switch and connected to said source of power and coupled to said warning means for initiating operation of said warning means when operation of said first switch due to occurrence of a breath of the patient fails to occur at predetermined short intervals of time;



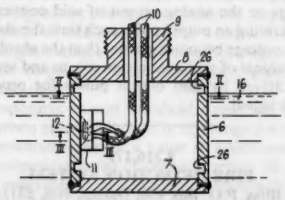
an actuating circuit connected to said source of power and to said warning means and between said control circuit and said warning means, said actuating circuit being connected to said first switch in a manner whereby operation of said first switch results in said actuating circuit placing said warning means in operable condition by connecting said source of power to said warning means; and

a second manually-operable switch connected to said actuating circuit for placing said warning means in inoperable condition by disconnecting said source of power from said warning means.

4,316,183
LIQUID LEVEL SENSOR

Stuart B. Palmer, Hull, and Gregory J. Primavesi, Theale, both of England, assignors to Bestobell Mobrey Limited, Slough, England

Filed Oct. 24, 1980, Ser. No. 200,519
Int. Cl.³ G08B *21/00*; G01F *23/00*
U.S. Cl. 340—621 **10 Claims**



1. A liquid level sensor comprising a hollow probe which has a tubular peripheral wall with radially inner and outer surfaces and made of a material capable of conducting an ultrasonic signal and which is adapted to be fitted to a liquid container with at least said outer wall surface exposed to the interior of said container; a transmitting transducer and a receiving transducer accommodated within said probe and coupled to said inner wall surface at angularly spaced positions so that an ultrasonic signal can be transmitted from said transmitting transducer to said receiving trahsducer along a path around said peripheral wall; means for energizing said transmitting transducer; and means coupled to said receiving transducer for distinguishing between a level of received signal corresponding to exposure of said peripheral wall to liquid and

a level of received signal corresponding to exposure of said peripheral wall to gas, and for producing a corresponding electrical output.

4,316,184

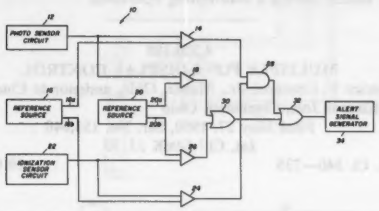
COMBINATION COMBUSTION-PRODUCTS DETECTOR

Richard A. Nagel, Chicago, Ill., assignor to Pittway Corporation, Aurora, Ill.

Filed Jul. 27, 1979, Ser. No. 61,366

Int. Cl.³ G08B *17/10*

U.S. Cl. 340—628 **6 Claims**



1. A combination combustion-products detector comprising first combustion-products sensor means for producing a first sensor signal having an amplitude related to the quantity of combustion products sensed thereby, second combustion-products sensor means for producing a second sensor signal having an amplitude related to the quantity of combustion products sensed thereby, first circuit means coupled to both of said sensor means and being responsive to each of the first sensor signal and the second sensor signal exceeding a first level to provide a first output signal, second circuit means coupled to both of said sensor means and being responsive to either of the first sensor signal or the second sensor signal exceeding a second higher level to provide a second output signal, and alerting-signal generating means coupled to both of said circuit means and being responsive to either of the output signals to produce an alerting signal.

4,316,185

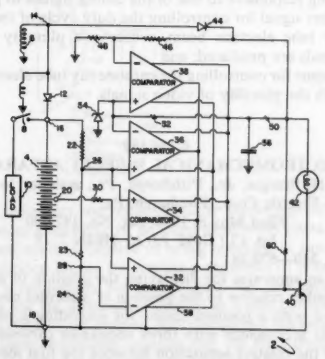
BATTERY MONITOR CIRCUIT

Donald L. Watrous, Liverpool, and Richard C. Weischedel, Camillus, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 17, 1980, Ser. No. 169,738

Int. Cl.³ G08B *21/00*; H03K *5/153*

U.S. Cl. 340—636 **6 Claims**



1. A battery monitor circuit for a multicell rechargeable battery having a high voltage terminal and a reference terminal at opposite ends and an intermediate terminal that divides the cells of the battery into two groups comprising:

a. resistive voltage divider coupled across said high voltage and reference terminals, said voltage divider comprising first and second large resistance components joined by a relatively small third resistance component, a first voltage magnitude being derived from the junction of said first and third resistance components, and said second voltage magnitude being derived from the junction of said second and third resistance components, said first and second voltage magnitudes defining the limits of a voltage range;

b. means for coupling to said intermediate terminal so as to provide a third voltage magnitude corresponding to the voltage between said intermediate and reference terminals, said first and second voltage magnitudes being nominally offset to either side of said third voltage magnitude; and

c. comparison means including

1. a first comparator network responsive to said first and third voltage magnitudes for detecting battery cell low impedance deterioration in one group of cells and high impedance deterioration in the other group of cells;

2. A second comparator network responsive to said second and third voltage magnitudes for detecting battery cell high impedance deterioration in said one group of cells and low impedance deterioration in said other group of cells;

3. a third comparator network responsive to one of said first or second voltage amplitudes and a reference voltage for detecting battery cell low impedance deterioration in both groups of cells;

said comparison means generating an error signal when the respective input voltage magnitudes to any of said first, second, and third comparator networks experience a reversal in relative magnitude.

4,316,186

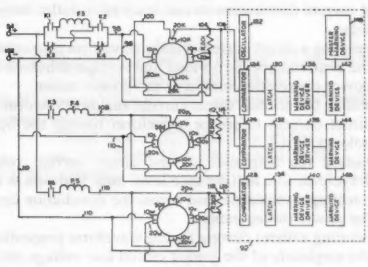
BRUSH WEAR DETECTION AND WARNING SYSTEM

James A. Purdy, Sylvania, Ohio, and Carl K. Dudley, Petersburg, Mich., assignors to Eltra Corporation, Toledo, Ohio

Filed Feb. 6, 1980, Ser. No. 118,945

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—648 **8 Claims**



1. A system for detecting and indicating brush wear of a plurality of brushes in a plurality of dynamoelectric machines each having a rotatable rotor contact surface, comprising:

at least two opposite-polarity brushes within each said dynamoelectric machine;

each said brush having electrical contact means protruding therein for a first predetermined distance, and an electrically conductive wear detecting wire protruding therein for a second predetermined distance, said second predetermined distance being larger than said first predetermined distance;

each said wear detecting wire having insulation about the circumference thereof and at a tip thereof for insulating said wire from said brush;

said wear detecting wires of like polarity brushes within each said dynamoelectric machine being joined together at first and second common points;

an isolating resistor being connected between said first and second common points;

a single interconnecting wire being attached to said first common point at a first end thereof for connecting each said dynamoelectric machine to said brush wear indicating device;

said brush wear indicating device providing a separate first indication of a voltage being connected to each said interconnecting wire, and a second indication of a voltage being connected to any one of said interconnecting wires,

said voltage being connected to said interconnecting wires when said brush having a wear detecting wire electrically connected to said interconnecting wire is worn by frictional contact with said rotor contact surface so that said insulation is abraded from said tip by said armature rotor surface, thereby connecting said wear detecting wire to said rotor contact surface.

4,316,187

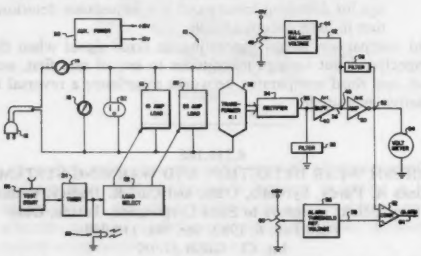
CURRENT RATING VERIFICATION SYSTEM

George A. Spencer, Rte. 2, Box 158-B8, Plano, Tex. 75074

Filed Jan. 9, 1981, Ser. No. 223,748

Int. Cl.³ G08B *21/00*; G01R *27/02*

U.S. Cl. 340—664 **13 Claims**



1. A method for verifying the load rating of an active alternating current distribution circuit at a power outlet comprising the steps:

generating a direct current analog waveform proportional to the amplitude of the no-load line voltage delivered by the power distribution circuit at the power outlet;

summing the no-load direct current analog waveform with a direct current reference waveform having the opposite polarity;

adjusting the amplitude of the direct current reference waveform to a null balance level until said sum is zero;

connecting a resistance load across the distribution circuit at the power outlet station;

generating a direct current analog waveform proportional to the amplitude of the loaded circuit line voltage delivered by the power distribution circuit at the power outlet; and,

measuring the sum of the loaded circuit direct current analog waveform and the null balance waveform.

7. A tester for verifying the load rating of an active electrical power distribution circuit at a power outlet comprising, in combination:

means for generating a direct current analog waveform proportional to the amplitude of the line voltage delivered by the power distribution circuit at the power outlet;

a reference generator for producing an adjustable amplitude, direct current reference waveform having a polarity opposite to the polarity of the direct current waveform;

an adding circuit having a first input coupled to the rectifier circuit for receiving the direct current analog waveform and a second input coupled to the reference generator for receiving the opposite polarity reference waveform, and having an output for conducting the sum of those waveforms;

an amplifier having an input coupled to the output of said adding circuit for receiving and amplifying the sum of said waveforms;

detector means coupled to said amplifier for registering the amplified sum;

a resistance load; and,

switching means coupled to the auxillary resistance load for disconnecting said load from said distribution circuit during a no-load balancing operation, and for connecting said load across the distribution circuit at the power outlet station during a load testing operation.

4,316,188

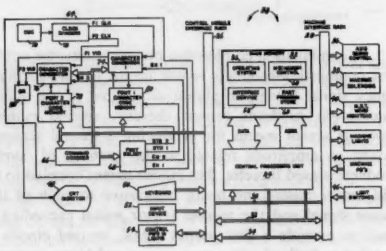
MULTIPLE FONT DISPLAY CONTROL

Maurice V. Cancasci, Jr., Mason, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed May 27, 1980, Ser. No. 153,640

Int. Cl.³ G06K *15/20*

U.S. Cl. 340—735 **10 Claims**



1. An apparatus for mixed display of dot matrix characters of a plurality of matrix sizes, represented by character code signals of a plurality of fonts, each font corresponding to one of the matrix sizes, the display being produced by impingement of a sweeping electron beam on a phosphorescent screen of a cathode ray tube, the apparatus comprising:

(a) timing means for producing a plurality of timing signals of different frequencies from a single clock source;

(b) a plurality of storing means for storing character code signals representing characters of a plurality of fonts, each storing means storing character code signals of only one font;

(c) a plurality of character generating means, each generating means being coupled to one of the storing means and being responsive to one of the timing signals to produce a video signal for controlling the duty cycle of the cathode ray tube electron beam, whereby a plurality of video signals are produced; and

(d) means for controlling the cathode ray tube electron beam with the plurality of video signals.

4,316,189

ELECTROMECHANICAL DISPLAY APPARATUS

Robert H. Sturges, Jr., Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 8, 1980, Ser. No. 147,800

Int. Cl.³ G09F *13/36*; H04N *7/18*

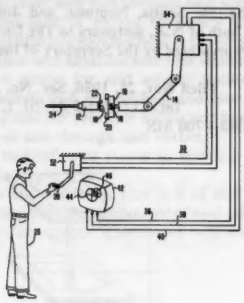
U.S. Cl. 340—870.34 **6 Claims**

1. In an apparatus for displaying the position of a movable first member relative to the position of a second member and operative with a position sensor for providing a plurality of signals in accordance with three respective cartesian coordinates of the relative separation between the first member and the second member, the combination of:

means providing a first image in accordance with the position of the first member, and

means providing a second image in accordance with the position of the second member,

with said first image providing means being movable and including a first screen having a reticule and cooperative with an iris member responsive to a first of said signals for



projecting a first image and including first drive means responsive to a second of said signals for moving the first image along one of said coordinates and second drive means responsive to a third of said signals for moving the first image along another of said coordinates.

4,316,190

SECONDARY SURVEILLANCE RADAR

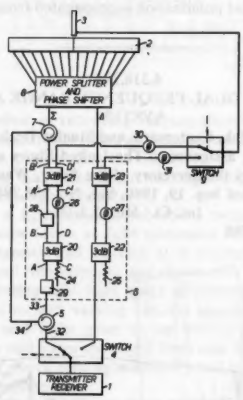
Henry W. Cole, Billericay, England, assignor to The Marconi Company Limited, Chelmsford, England

Filed May 28, 1980, Ser. No. 153,940

Claims priority, application United Kingdom, Jun. 5, 1979, 19502/79

Int. Cl.³ G01S *13/78*

U.S. Cl. 343—6.5 R **10 Claims**



1. A secondary surveillance radar including an antenna arrangement consisting of an omni-directional antenna and a directional antenna capable of being operated in sum and difference modes; means for routing a sequence of pulses to the antenna arrangement, for transmitting the first pulse of the sequence via the directional antenna as a sum pattern and via the omni-directional antenna, for transmitting the second pulse via the omni-directional antenna and via the directional antenna as a difference pattern, and for transmitting the third pulse of the sequence via the directional antenna as a sum pattern.

4,316,191

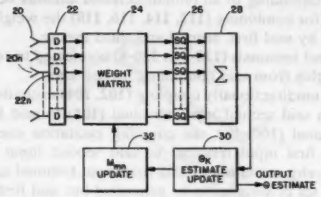
LOW ANGLE RADAR PROCESSING MEANS

Takeo Sawatari, Birmingham; Patrick N. Keating, Bloomfield; Ronald F. Steinberg, Livonia, all of Mich., and Rolf K. Mueller, Stillwater, Minn., assignors to The Bendix Corporation, Southfield, Mich.

Filed Apr. 14, 1980, Ser. No. 140,032

Int. Cl.³ G01S *3/06*

U.S. Cl. 343—16 R **4 Claims**



1. Radar equipment for processing electromagnetic signals from a low elevation target including radar means for receiving said electromagnetic signals from said low elevation target directly and via ground bounce comprising:

an N element array antenna for receiving said electromagnetic signals;

a set of N detectors of the received electromagnetic signals, each said detector being arranged in a separate channel;

demodulator means for converting the detected electromagnetic signals into a set of N complex electrical signals X_m, one said electrical signal being contained in each said channel;

a matrix of complex weights M_{mn} responsive to said set of N complex electrical signals X_m for generating a set of N complex electrical signals X_n' where:

$$X_n' = \sum_m M_{mn} X_m;$$

means for determining the total power represented by said set of N complex electrical signals X_n'; and,

means for iteratively adjusting said complex weights M_{mn} to minimize said total power.

4,316,192

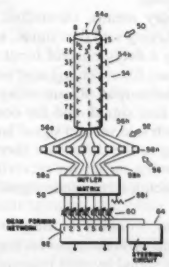
BEAM FORMING NETWORK FOR BUTLER MATRIX FED CIRCULAR ARRAY

Joseph H. Acoraci, Phoenix, Md., assignor to The Bendix Corporation, Southfield, Mich.

Filed Nov. 1, 1979, Ser. No. 90,836

Int. Cl.³ G01S *1/14*; H01Q *3/36, 3/40*

U.S. Cl. 343—100 SA **2 Claims**



1. A beam forming network for an antenna array including:

a first input terminal (**100**);

first means (**108**) responsive to excitation of said first input

terminal for generating a first set of weights corresponding to a sum pattern antenna beam having omnidirectional side lobes;

a second input terminal (**101**);

second means (**110**) responsive to excitation of said second input terminal for generating a first subset of weights corresponding to a difference pattern antenna beam;

third means (**106**) responsive to excitation of said second input terminal for generating a second subset of weights corresponding to an omnidirectional antenna beam;

means for combining (**112, 114, 116, 118**) the weights generated by said first, second and third means;

N output terminals (**120-1** to **120-8**) connected to receive the weights from said combining means; and,

means unidirectionally coupling (**102, 104**) excitation energy from said second input terminal (**101**) to said first input terminal (**100**) but not coupling excitation energy from said first input terminal to said second input terminal, whereby excitation of said first input terminal causes said first set of weights to be generated but said first and second subsets are not generated so that the weights corresponding to a sum pattern antenna beam having omnidirectional side lobes are received at said N output terminals and whereby excitation of said second input terminal causes said first input terminal also to be excited so that weights corresponding to difference pattern antenna beam having omnidirectional side lobes are received at said N output terminals.

4,316,193

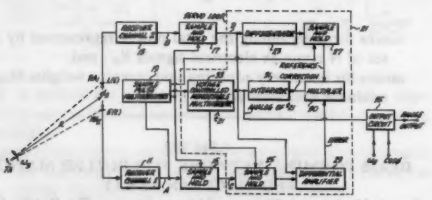
SERVO LOOP PROCESSOR

Philip Jones, Bothell, and Moorfield Storey, Jr., Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation-in-part of Ser. No. 488,401, Jul. 15, 1974, abandoned. This application Oct. 1, 1979, Ser. No. 80,533

Int. Cl.³ G01S *3/02*

U.S. Cl. 343—112 D **22 Claims**



1. A servo loop processor suitable for use in determining the time shift between first and second like signals, said first signal occurring in time prior to said second signal, said servo loop processor comprising:

controllable delay means, connected to receive said first signal, for delaying said first signal, said controllable delay means having a delay control input;

comparison means for receiving said second signal and being coupled to the output of said delay means for receiving said delayed first signal, and for comparing said delayed first signal with said second signal and generating an error signal relating to the difference therebetween;

reference producing means for receiving said second signal, and for producing a reference signal in accordance therewith;

multiplier means, coupled to outputs of said comparison means and said reference producing means, for multiplying said error signal by said reference signal and for producing a correction signal in accordance therewith; and,

delay control means, coupled to an output of said multiplier means and to the delay control input of said controllable delay means, for controlling said controllable delay means so that said first signal is delayed by an amount intended to bring it into time correspondence with said second signal at which point said error signal reduces to zero.

4,316,194

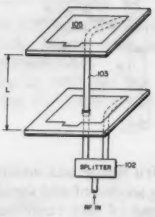
HEMISPHERICAL COVERAGE MICROSTRIP ANTENNA

Charles M. De Santis, Neptune, and John R. Wills, Ocean Grove, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 24, 1980, Ser. No. 209,809

Int. Cl.³ H01Q *13/10, 1/28*

U.S. Cl. 343—700 MS **9 Claims**



1. An antenna having hemispherical coverage with circular polarization comprising:

two or more patch units positioned plane parallel, stacked, with space between less than a half wavelength each patch unit comprising a thin metallic patch having at least one discontinuity in the symmetry of its perimeter, the patch mounted on a larger sized plane of metal-backed dielectric material, feedlines each connected to a patch on the patch units,

a phase delay device in one of said feedlines,

whereby the patches are driven from the same source with proper phasing of one line and a hemispherical pattern with circular polarization is propagated from said antenna structure.

4,316,195

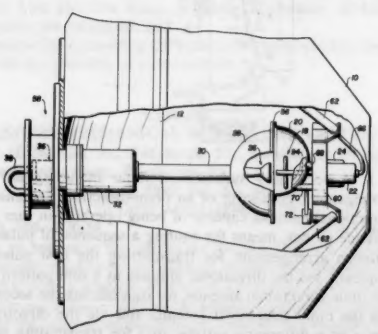
ROTATING DUAL FREQUENCY RANGE ANTENNA SYSTEM

Leonard J. Steffek, Centereach, and Stanley Drake, Blue Point, both of N.Y., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 19, 1980, Ser. No. 188,798

Int. Cl.³ H01Q *3/00*

U.S. Cl. 343—758 **15 Claims**



1. A conical scan antenna system simultaneously operable at two different frequencies, comprising, in combination:

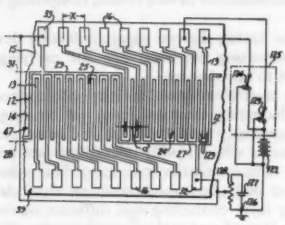
a parabolic reflector;
a first stationary feed of first frequency RF signals positioned along an axis through the vertex of said parabolic reflector;
rotatable RF reflector means for said first stationary feed facing said parabolic reflector from behind said first feed and being offset from said axis through said vertex;
a second stationary feed of second frequency RF signals positioned along said axis substantially at the vertex of said parabolic reflector and adjacent said first stationary feed;
rotatable RF lens means for said second stationary feed located intermediate said second feed and said parabolic reflector, facing said RF reflector means and being axially aligned with said axis through said vertex;
means attaching said reflector means to said lens means in face-to-face relationship; and
scan drive means coupled to at least one of said rotatable means for rotating both said means about said axis through said vertex to effect conical scanning of both feeds simultaneously.

4,316,196

ILLUMINATION AND LIGHT GATE UTILIZATION METHODS AND APPARATUS

John H. Jacobs, Altadena, Calif., assignor to Bell & Howell Corporation, Chicago, Ill.

Division of Ser. No. 925,132, Jul. 17, 1978, abandoned, which is a continuation of Ser. No. 776,157, Mar. 10, 1977, abandoned. This application Mar. 27, 1979, Ser. No. 24,486
Int. Cl.³ G01D *15/14*
U.S. Cl. 346—1.1 **8 Claims**



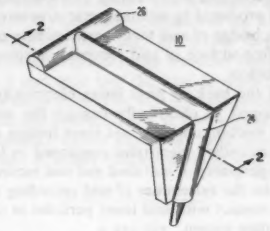
1. In a method of recording varying electric signals with a plurality of electrically actuable light gates, the improvement comprising in combination the steps of:
illuminating said light gates with light of a first intensity above zero light intensity;
providing a light-sensitive recording medium sensitive to illumination levels at light intensities including said first light intensity and starting at a second light intensity below said first intensity and above zero light intensity:
preconditioning said light gates to subsequent opening in response to said varying electric signals by electrically biasing said light gates to an initially open condition wherein said gates pass light from said illumination at an intensity above zero light intensity and below said second light intensity;
exposing said recording medium to said light passed by said preconditioned gates in said initially open condition whereby said recording medium is exposed to light below said second intensity;
selectively energizing and further opening said preconditioned light gates in response to said varying electric signals to pass light from said illumination at at least said second light intensity and provide a luminous representation of said varying electric signals; and
exposing said recording medium to said passed illumination at at least said second light intensity and recording said luminous representation of said varying electric signals on said recording medium.

4,316,197

EASILY REMOVABLE INSTRUMENT PEN TIP

James R. Hubbard, Moorestown, and William A. Tallerico, Willingboro, both of N.J., assignors to Graphic Controls Corporation, Cherry Hill, N.J.

Continuation of Ser. No. 886,722, Mar. 15, 1978, abandoned. This application Aug. 20, 1979, Ser. No. 67,813
Int. Cl.³ G01D *15/16*
U.S. Cl. 346—140 R **12 Claims**



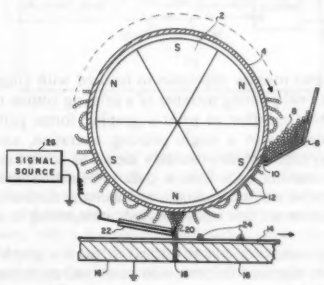
1. One piece removable and replaceable instrument pen tip body formed of resilient plastic, said body having an ink transmitting passageway therethrough, one end of which is adapted to receive and sealingly engage an ink supply tube associated with a pen arm and a remote ink supply and the other end of which is adapted to receive and sealingly engage a straight section of an elongated nib element in alignment therewith, said body having a relatively flat shaped portion, said passageway being open from said tube to said nib element, at least a portion of said passageway having an axis lying in the plane of said flat shaped portion, said body also having at least one locator on its outer surface to ensure positive positioning of said body on mounting means therefor.

4,316,198

ELECTROGRAPHIC RECORDING

Roger D. Erickson, Denver, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 23, 1980, Ser. No. 152,599
Int. Cl.³ G01D *15/06*; G03G *15/09*
U.S. Cl. 346—150 **4 Claims**



1. An electrographic recording system for recording on a first surface of an electrographic recording medium, said system comprising:
a non-magnetic, back-up platen positioned to engage the opposite surface of said recording medium;
a multipolar magnetic structure, said magnetic structure being fixed in position;
a non-magnetic electrically non-conductive shell surrounding said magnetic structure, and mounted for rotary motion about said magnetic structure;

said shell being spaced a predetermined small distance above the plane of the surface of said recording medium;

hopper means for toner particles positioned adjacent the periphery of said shell to enable toner particles to be drawn from said hopper means onto said shell by magnetic fields produced by said magnetic structure;

a magnetically permeable strip member positioned in juxtaposition with portions of said back-up platen, to extend along a line coextensive with said shell and parallel to the axis thereof at a position defining a recording station, said magnetically permeable strip forming a concentration of a magnetic field produced by said magnetic structure and forming a dynamic bridge of said toner particles between said drum and said first surface of said recording medium at said recording station;

a portion of the back-up plate being electrically conductive and positioned to electrically engage the surface of the recording medium opposite said toner bridge; and

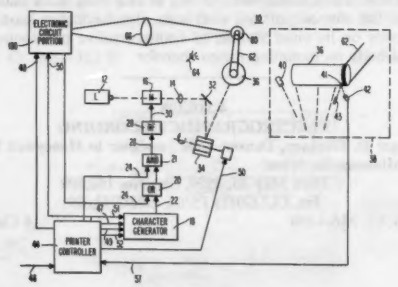
an array of recording electrodes positioned in the space between the periphery of said shell and said recording medium with at least the extremities of said recording electrodes in electrical contact with said toner particles in said bridge at said recording station.

4,316,199

GRAPHIC FORMS OVERLAY APPARATUS

Nelson L. Greenig, Norristown, and Richard M. Shelton, Oreland, both of Pa., assignors to Sperry Corporation, New York, N.Y.

Filed Jan. 7, 1980, Ser. No. 110,286
Int. Cl.³ G01D *15/14;* H04N *1/22*
U.S. Cl. 346—160 **6 Claims**



1. A forms overlay apparatus to be used with a light sensitive, rotational printing member of a printing system to enable said printing member to print a graphic forms pattern and information data in a single printing operation, and which printing system includes circuitry means to accept and transform information data from a data information source into representative electrical signals, and includes further circuitry means to generate first control signals, comprising in combination:

rotating mounting means formed to have a graphic forms master disposed thereon, said rotational mounting means coupled to said rotational printing member to rotate in a predetermined relationship therewith;

light source means disposed to transmit light to said rotating graphic forms master to create reflected light images thereof;

light sensitive logic means for receiving linear light images and for generating simultaneously a plurality of image electrical signals representative thereof;

optical means disposed to receive a linear portion of said reflected light images for focusing said linear portion or said light sensitive logic means;

first logic circuitry means coupled to said light sensitive logic means for generating second control signals for operation of said light sensitive logic means;

second logic circuitry means connected to said light sensitive logic means, said first logic circuitry means, and said printing system to receive and merge image electrical signals and information data electrical signals in response to said first and second control signals;

light source-optical system means disposed to selectively affect incremental light transmissions to said light sensitive printing member in response to electrical signals applied thereto; and

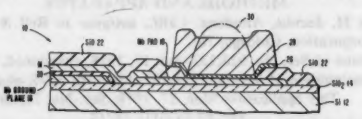
circuitry means connecting said second logic circuitry means to said light source-optical system means.

4,316,200

CONTACT TECHNIQUE FOR ELECTRICAL CIRCUITRY

Irving Ames, Peekskill; Wilhelm Anacker, Katonah; Kurt R. Grebe, Beacon, and Charles J. Kircher, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 7, 1980, Ser. No. 128,219
Int. Cl.³ H01L *39/22*
U.S. Cl. 357—5 **12 Claims**



1. A superconductive device circuit, comprising in combination:

a substrate having thereon superconducting devices and a superconducting electrical line for carrying electrical currents to said devices,

a bonding layer which must be electrically connected to said superconducting electrical line, said bonding layer and said superconducting electrical line being comprised of components which readily interdiffuse into one another,

a metallic diffusion barrier layer located between said bonding layer and said superconductive electrical line, said bonding layer contacting said diffusion barrier at a first portion thereof and said superconducting electrical line contacting said diffusion barrier at a second portion thereof laterally displaced from said first portion,

there being a layer of electrically insulating material located over said diffusion barrier layer and separating said first and second portions from one another.

4,316,201

LOW-BARRIER-HEIGHT EPITAXIAL GE-GAAS MIXER DIODE

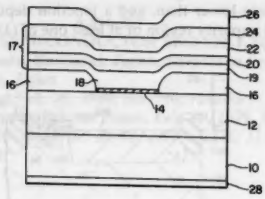
Aristos Christou, Springfield, and John E. Davey, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 8, 1980, Ser. No. 147,992
Int. Cl.³ H01L *29/48*
U.S. Cl. 357—15 **14 Claims**

1. In a gallium arsenide (GaAs) mixer diode having a low Schottky-barrier height in the range of approximately 0.40 eV–0.55 eV for operating at high frequencies (X-band and above) at low local oscillator power levels (about 0.25 mW–0.75 mW), the mixer diode having a GaAs substrate, a GaAs epitaxial layer on the GaAs substrate, a refractory metal overlayer structure, a conducting layer of metal on the overlayer structure, and an ohmic contact to the GaAs substrate, the improvement comprising:

a thin heterojunction epitaxial layer of germanium on the GaAs epitaxial layer, said refractory metal overlayer structure being on the epitaxial layer of germanium, the thickness of the epitaxial layer of germanium being suffi-

cient for tunneling of electrons from the metal overlayer to the GaAs and for producing an effective lowering of the Schottky barrier height, the GaAs being maintained at a temperature, during deposition of the epitaxial germa-



nium on the GaAs, sufficient to develop an epitaxial growth for completely covering and uniformly wetting the GaAs, and the epitaxial germanium being deposited on the GaAs at a rate sufficient for epitaxial growth.

4,316,202

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING A SCHOTTKY BARRIER DIODE

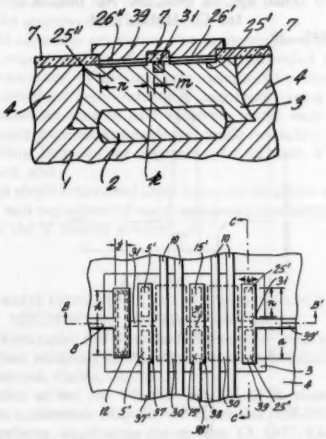
Susumu Mori, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Japan

Continuation of Ser. No. 972,725, Dec. 26, 1978, abandoned. This application Feb. 17, 1981, Ser. No. 234,848

Claims priority, application Japan, Dec. 27, 1977, 52-158855

Int. Cl.[3] H01L *29/48, 29/56, 29/64*

U.S. Cl. 357—15 10 Claims



1. A semiconductor integrated circuit device, comprising:

a semiconductor substrate having a surface and having an impurity region of one conductivity type adjacent said surface;

a plurality of metallic layers formed of a first metallic material and located on said surface and spaced apart from each other so as to form a gap located over said impurity region, each of said metallic layers being at a respective position over said impurity region and having a predetermined contact surface area contacting said surface of said substrate and defining a respective Schottky barrier;

first electrode electrically connected directly to said metallic layers and bridging the gap between said metallic layers above said impurity region, whereby said Schottky barriers formed between said metal layers and said substrate operate as a single Schottky diode;

a first high impurity concentration region of said one conductivity type having a higher impurity concentration than said impurity region and located in said impurity region and adjacent said surface of said substrate; and

electrode means in ohmic contact with said first high impurity concentration region; each of said contact surface areas being sufficiently small that it lies within a range of values in which it is related in a non-linear manner to at least one of: (1) the series resistance of the Schottky barrier of which it forms a part; and (2) the forward current at zero forward voltage of the Schottky barrier of which it forms a part such that the total forward drop of said Schottky diode defined by said separate Schottky barriers is less than the total drop of a Schottky diode formed of a single Schottky barrier having the same area as the total area of said Schottky barriers defining said Schottky diode.

4,316,203

INSULATED GATE FIELD EFFECT TRANSISTOR

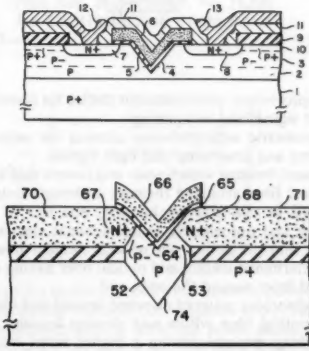
Ryoiku Tohgei, Machida, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 42,493, May 24, 1979, abandoned. This application Dec. 31, 1980, Ser. No. 224,197

Claims priority, application Japan, May 29, 1978, 53-64067

Int. Cl.[3] H01L *29/78*

U.S. Cl. 357—23 12 Claims



1. An insulated gate field effect transistor, comprising:

a substrate including a first semiconductor layer of a first conductivity type and having a first impurity concentration, said first semiconductor layer having an uppermost surface, and a second semiconductor layer disposed on said surface of said first semiconductor layer and having a second impurity concentration of the same conductivity type as said first impurity concentration, said second semiconductor layer having an uppermost surface, said first impurity concentration being higher than said second impurity concentration,

a source region and a drain region, each of a second conductivity type opposite to said first conductivity type, said source region and said drain region being spaced apart from each other and respectively located at said uppermost surface of said second semiconductor layer,

said substrate having a recess extending downwardly from said uppermost surface of said second semiconductor layer through said second semiconductor layer into and

terminating at a point within said first semiconductor layer, said recess separating said source and drain regions and exposing portions of said first and second semiconductor layers,

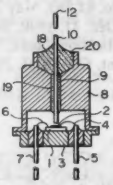
a gate region extending between said source region and said drain region on said uppermost surface of said second semiconductor layer and on said exposed portions of said first and second semiconductor layers, said gate region comprising first and second depletion mode gate portions located in said second semiconductor layer adjacent to said source region and said drain region, respectively, and an enhancement mode gate portion located in said first semiconductor layer between said first and second depletion mode gate portions and adjacent thereto, said enhancement mode gate portion comprising said terminating point of said recess in said first semiconductor layer.

4,316,204

OPTOELECTRONIC SEMICONDUCTOR DEVICE

Nobuhiro Inagaki; Eiichi Kitamura, and Ryosuke Namazu, all of Yokohama, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 6, 1980, Ser. No. 118,973
Claims priority, application Japan, Feb. 9, 1979, 54-14471
Int. Cl.³ H01L *27/14*
U.S. Cl. 357—30 **6 Claims**



1. An optoelectric semiconductor device for communication with light signals and comprising:

an optoelectric semiconductor element for selectively receiving and generating said light signals;

an element housing which seals and covers said element;

an optical fiber arranged through a through hole which is formed in said element housing, one end of said fiber facing said optoelectric semiconductor element and the other end projecting out of said element housing by a predetermined length, said optical fiber having a core and a clad layer around the core; and

a light absorbing material disposed around said clad layer of said optical fiber within said element housing, said light absorbing material having a higher index of refraction than said clad layer and said light absorbing material substantially absorbing the light of said signals being transmitted by said optical fiber between said optoelectronic semiconductor element and the exterior of said device.

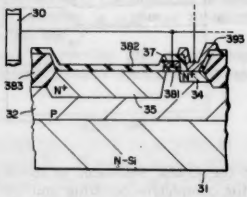
4,316,205

SOLID-STATE IMAGING DEVICE

Masakazu Aoki, Hachioji; Iwao Takemoto, Kodaira; Masaharu Kubo, Hachioji, and Ryuichi Izawa, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 7, 1980, Ser. No. 119,383
Claims priority, application Japan, Feb. 19, 1979, 54-17340
Int. Cl.³ H01L *27/14*
U.S. Cl. 357—30 **30 Claims**

1. In a solid-state imaging device having in one major surface region of a monolithic semiconductor body, photodiodes which are arrayed in two dimensions, vertical switching MOS transistors and horizontal switching MOS transistors which address the photodiodes, MOS transistors which constitute vertical and horizontal scanning circuits for turning "on" and "off" the switching MOS transistors, and MOS transistors which constitute other peripheral circuitry, the photodiodes being constructed of source regions of the vertical switching MOS transistors and the semiconductor body; a solid-state imaging device characterized in that the source region of said each vertical switching MOS transistor has a surface impurity concentration lower than, and a junction depth deeper than, those of an impurity region of at least one of (1) a drain region



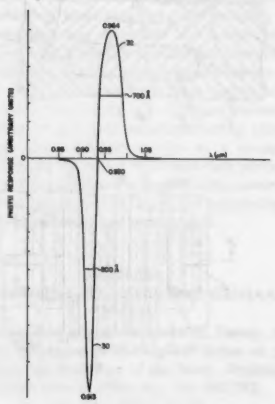
of said each vertical switching MOS transistor, (2) a source or drain region of said each horizontal switching MOS transistor, (3) a source or drain region of said each MOS transistor of said horizontal scanning circuit, (4) a source or drain region of said each MOS transistor of said vertical scanning circuit, and (5) a source or drain region of said each MOS transistor of said other peripheral circuitry.

4,316,206

TWO COLOR NARROW BANDWIDTH DETECTOR

Nicholas Bottka, and Marian E. Hills, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 14, 1980, Ser. No. 140,398
Int. Cl.³ H01L *27/14*
U.S. Cl. 357—30 **7 Claims**



1. A narrow band two color detector with current inversion comprising:

a substrate having a band gap which filters wavelengths of light shorter than λ_{BG}, which is the wavelength of light with energy equal to the band gap of said substrate;

a plurality of epitaxial layers placed on the filtered side of said substrate which have gap energies smaller than said substrate, said epitaxial layers having a built in field between two of said plurality of layers due to interface traps; and

electrical contacts placed on the unfiltered side of said substrate and on the outermost layer of said plurality of epitaxial layers for creating a predetermined voltage across

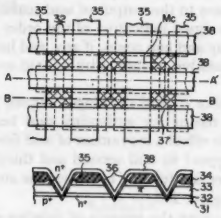
said detector, such that light absorbed on one side of said interface traps produces an inverted photoelectric current from light absorbed on the opposite side of said interface traps.

4,316,207

V-GROOVE SEMICONDUCTOR MEMORY DEVICE

Takashi Matsumoto, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 11, 1980, Ser. No. 120,093
Claims priority, application Japan, Feb. 19, 1979, 54-18256
Int. Cl.³ H01L *27/02, 29/78, 29/06;* **G11C** *11/24*
U.S. Cl. 357—41 **7 Claims**



1. In a semiconductor device in which gates are formed at the sides of V-shaped grooves that are formed in a semiconductor bulk of a first conductivity type, the gates being part of VMIS transistors for controlling information by transferring electric charge to the junction capacitance of plural capacitors that are embedded in the vicinity of the tips of the V-shaped grooves, the improvement comprising

each said capacitor consisting of a single respective portion of a respective one of at least one embedded layer of semiconductor of the opposite conductivity type, each said embedded layer extending uniformly over a respective extended area of said substrate under each of said V-shaped grooves, and each said single respective portion extending between an adjacent pair of said V-shaped grooves, and

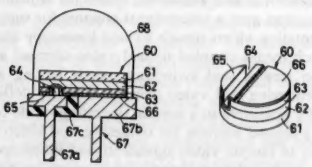
each said single embedded layer being divided into a plurality of said capacitors of equal area and capacitance by the tips of the V-shaped grooves.

4,316,208

LIGHT-EMITTING SEMICONDUCTOR DEVICE AND METHOD OF FABRICATING SAME

Hiroyuki Kobayashi, and Masafumi Hashimoto, both of Kawasaki, Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Continuation of Ser. No. 916,253, Jun. 16, 1978, abandoned.
This application May 30, 1980, Ser. No. 155,007
Claims priority, application Japan, Jun. 17, 1977, 52-72417
Int. Cl.³ H01L *29/06, 23/48, 29/44*
U.S. Cl. 357—55 **16 Claims**



1. A light-emitting semiconductor device comprising:

a substrate;

a first semiconductor layer which is formed on said substrate; said first semiconductor layer being continuous;

a second semiconductor layer which is different in conductivity from said first layer and is formed on the outer surface of said first layer, said second layer being formed with a recess which is deeper than the thickness of said second layer, said recess being formed by removal of said second layer in a selected area and by removal of a surface portion of said first layer such that surfaces of said second layer are exposed and a subsurface portion of said first layer is uncovered and serves as the bottom of said recess;

a first electrode layer selectively covering the outer surface of said second semiconductor layer and extending into said recess so as to cover the exposed surfaces of said second semiconductor layer and said subsurface portion of said first semiconductor layer;

a second electrode layer selectively covering the outer surface of said second semiconductor layer so as to be separated from said first electrode layer;

a first solder bump built up on said first electrode layer and filling up said recess; and

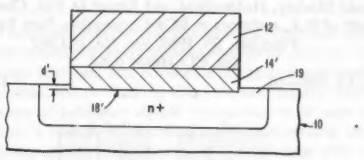
a second solder bump built up on said second electrode layer and being separated from said first solder bump.

4,316,209

METAL/SILICON CONTACT AND METHODS OF FABRICATION THEREOF

Paul S. Ho, Chappaqua, N.Y.; Uwe Köster, Bochum, Fed. Rep. of Germany; Tung-Sheng Kuan, Shrub Oak, N.Y.; Iwao Ohdomari, Yokohama, Japan, and Arnold Reisman, Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 31, 1979, Ser. No. 71,528
Int. Cl.³ H01L *23/48, 29/46, 29/62*
U.S. Cl. 357—67 **5 Claims**



1. A contact for making an electrical connection between an aluminum conductor and a silicon substrate comprising:

aluminum alloyed with at least one noble metal from the group Pd and Pt to form a resultant alloy wherein at least one region of said resultant alloy is further alloyed with silicon; and

wherein the ratio of Al to said noble metals is in the atomic ratio of between about 3 to 2 and 2 to 3.

4,316,210

VIDEO SIGNAL PROCESSING APPARATUS

James H. Wharton, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

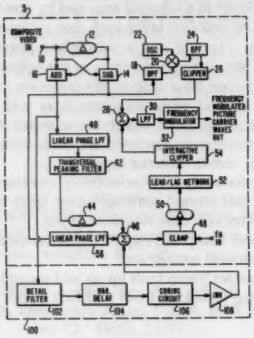
Filed Aug. 28, 1980, Ser. No. 181,989
Int. Cl.³ H04N *5/76*
U.S. Cl. 358—4 **23 Claims**

1. Apparatus for minimizing clipping distortion in a video signal processor of the type including a preemphasis means for boosting the high frequency content of an input luminance signal and clipping means for limiting the amplitude of the resultant preemphasized luminance signal to a predetermined level, said apparatus comprising:

detail filter means responsive to said input luminance signal for producing a detail signal having an amplitude representative of transitions of said input luminance signal;

delay means in said video signal processor for delaying said luminance signal by a predetermined time period prior to the application thereof to said clipping means;

circuit means for subtractively combining said detail signal and the delayed luminance signal in a timed relationship such that the detail component of the resultant combined



signals precedes the luminance component of the resultant combined signals by a predetermined time and is of a sense relative to that of transitions of said luminance component to cause the resultant signal to exhibit preshoot and reduced overshoot; and

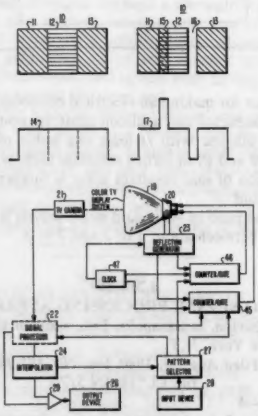
means for applying said resultant signal to said clipping means.

4,316,211

COLOR KINESCOPE CONVERGENCE MEASURING SYSTEM

Donald Mackey, Haddonfield, and Ernest D. Fox, Cherry Hill, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 30, 1980, Ser. No. 192,362
Int. Cl.³ H04N 9/62
U.S. Cl. 358—10 **11 Claims**



1. A convergence measurement apparatus for use with a color television display system, said display system comprising a kinescope having a display screen and incorporating three electron beam producing means, and a deflection yoke for deflecting said beams in horizontal and vertical directions to form a raster on said display screen, said apparatus comprising:

means for activating one of said electron beam producing means to generate a first beam display area on said kinescope display screen;

means for activating another of said beam producing means to generate second and third beam display areas on said kinescope display screen, said second and third display areas occurring on opposite boundaries of said first display area and contiguous with said first display area upon occurrence of the convergence of said one and said other of said beams in the vicinity of said display areas, said first display area overlapping one of said second or third display areas to form an overlap zone and an associated gap zone upon occurrence of the misconvergence of said one and said other of said beams;

scanning means for detecting the light emitted from said first, second and third display areas, and from said overlap and gap zones, if any, in a predetermined order;

means, responsive to the output of said scanning means, for developing a signal indicative of the order of occurrence of said overlap and gap zones, if any, and having an amplitude representative of the width of said overlap and gap zones;

means, responsive to said developed signal, for modifying one of said means for activating said beam producing means so as to effect a movement of said first beam display area with respect to said second and third beam display areas in a direction tending to reduce the amplitude of said developed signal; and

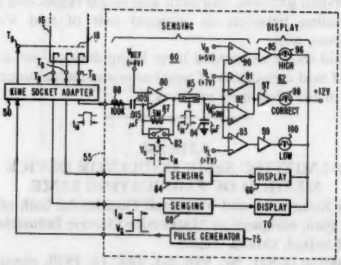
means for indicating the amount of relative motion of said display areas needed to minimize the amplitude of said developed signal.

4,316,212

METHOD FOR ADJUSTING THE BIAS OF A KINESCOPE IN A COLOR TELEVISION RECEIVER AND APPARATUS TO FACILITATE SAME

William E. Rodda, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 25, 1980, Ser. No. 190,596
Int. Cl.³ H04N 9/62
U.S. Cl. 358—10 **15 Claims**



1. Apparatus for use with a color television receiver including an image reproducing kinescope with an intensity control electron gun having a cathode electrode and an associated grid electrode; deflection means for providing horizontal and vertical scanning control of said kinescope; means for adjusting the bias of said electron gun; a video signal channel for supplying image representative video signals to said kinescope electron gun; and switch means coupled to said video channel and to said deflection means, said switching means having a first position for rendering said video channel and said deflection means normally operative in a normal operating mode of said receiver, and a second position for rendering said video channel inoperative to couple video signals to said kinescope and for rendering said deflection means inoperative to provide vertical deflection scanning of the kinescope in a service operating mode of said receiver when it is desired to adjust the operating characteristics of said kinescope; said apparatus

facilitating the adjustment of the blanking current conducted by said electron gun when said receiver is in said service operating mode, and comprising:

means for energizing said kinescope electron gun during periodic monitoring intervals to produce a cathode output signal representative of the current conduction level of said cathode;

sampling means electrically coupled to said cathode electrode for providing a sample of said cathode output signal;

means for comparing said sample with a reference signal to determine the status of said current conduction level of said cathode as being less than, greater than, or substantially equal to a desired current conduction level; and

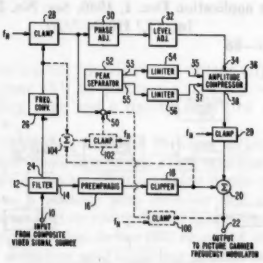
display means coupled to said comparing means for providing a visual indication of said status of said current conduction level.

4,316,213

VIDEO PROCESSOR EMPLOYING VARIABLE AMPLITUDE COMPRESSION OF THE CHROMINANCE COMPONENT

James H. Wharton, and Jack E. James, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 23, 1980, Ser. No. 190,082
Int. Cl.[3] H04N *9/493, 9/38, 9/535*
U.S. Cl. 358—11 **7 Claims**



1. Video signal processing apparatus, comprising:

filter means for separating a composite video input signal into a luminance component and a chrominance component;

first signal processing means for preemphasizing said luminance component of said input signal;

second signal processing means for compressing said chrominance component in response to peaks in excess of a given value of a control signal supplied thereto;

means for summing the preemphasized luminance component produced by said first signal processing means with the controllably compressed chrominance component produced by said second signal processing means to produce an output composite video signal for application to a frequency modulator means; and

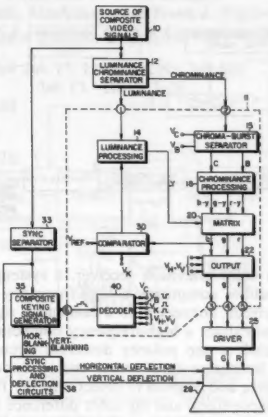
means for deriving said control signal from a selected one of (1) said chrominance component of said composite video input signal, (2) a sum of said chrominance component of said composite video input signal and said preemphasized luminance signal and (3) said output composite video signal.

4,316,214

KEYING SIGNAL GENERATOR WITH INPUT CONTROL FOR FALSE OUTPUT IMMUNITY

Thomas D. Yost, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 29, 1980, Ser. No. 182,752
Int. Cl.[3] H04N *5/44, 9/46*
U.S. Cl. 358—21 R **10 Claims**



1. In a television receiver for processing a composite television signal containing image information within periodic horizontal image intervals, and horizontal image sync information within periodic image blanking intervals, said receiver including a source of reference signals representative of said sync information; a source of switching signals comprising image and blanking interval components in synchronism with said image and blanking interval components of said television signal; and keyed video signal processing circuits; apparatus for generating keying signals during said blanking intervals, comprising:

an input signal coupling path coupled to said source of reference signals and including timing means responsive to said reference signal for providing a timing signal corresponding to a translated version of said reference signal;

keyed means normally subject to switching between first and second switching states in response to said timing signal for generating output keying signals during said blanking intervals, and undesirably subject to switching between said first and second states in response to spurious input signals coupled via said input path during said image intervals;

means for coupling output signals from said keyed means to said keyed signal processing circuits; and

control means for inhibiting false keying signal outputs from said keyed means during said image intervals, said control means being coupled to said input coupling path and responsive to said switching signals for enabling said input coupling path during said blanking intervals, and for disabling said input coupling path during said image intervals so that said timing means is isolated from said source of reference signals and from said source of switching signals during said image intervals.

4,316,215

SYSTEM FOR IMPROVING REPRODUCTION OF IMAGES IN A COLOR TELEVISION RECEIVER

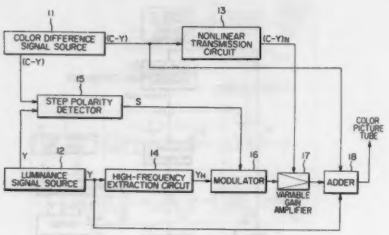
Yoshio Yasumoto; Tetsuo Tomimoto, both of Osaka, and Eiichi Taira, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 18, 1980, Ser. No. 188,478

Claims priority, application Japan, Sep. 26, 1979, 54-124623; Dec. 6, 1979, 54-158542

Int. Cl.³ H04N 9/535, 5/14

U.S. Cl. 358—37 8 Claims



1. In a color television receiver, a system for improving image qualities comprising a high-frequency component extraction circuit connected to a luminance signal source and adapted to extract a high-frequency component of the luminance signal, a step polarity detection circuit connected to both said luminance signal source and a color difference video signal source and adapted to detect whether the transitions of the luminance signal and the color difference signal are in the same direction or in opposite directions and to provide a detection output which in turn is applied to a circuit having a nonlinear transmission characteristic, thereby generating a modulation signal, a modulator adapted to modulate said high-frequency component of said luminance signal with said modulation signal, thereby generating a correction signal, and an adder means adapted to provide the sum of said correction signal and the color difference signal and the luminance signal for the reproduction of a color picture.

4,316,216

BEAM INDEX COLOR TELEVISION RECEIVER

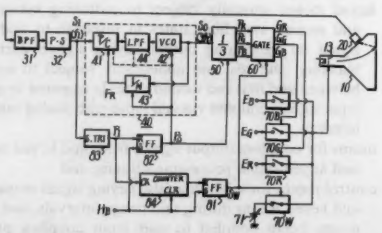
Katsuo Isono, and Susumu Akazawa, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 19, 1980, Ser. No. 131,834

Claims priority, application Japan, Mar. 24, 1979, 54-34831; Mar. 27, 1979, 54-35896

Int. Cl.³ H04N 9/24

U.S. Cl. 358—67 15 Claims



1. Apparatus for controlling the electron beam in a beam index color television receiver of the type having a cathode ray tube which is provided with a display screen including an image area and an adjacent contiguous run-in area and including beam-excitable color elements disposed along said image area, which are scanned by said electron beam as the latter is modulated by color control signals and index elements disposed along said image area and run-in area, which are scanned by said electron beam as the latter scans said display screen, said apparatus comprising:

means for generating an index signal in response to the scanning of said index elements;

phase-locked loop means supplied with said index signal for producing an output signal having a frequency related to said index signal;

gating means for sequentially gating said color control signals individually so as to modulate said electron beam as said beam scans respective ones of said color elements;

means for generating gating pulses in response to said output signal and for supplying said gating pulses to said gating means so as to cause the latter to sequentially gate said respective color control signals; and

means apart from said means for generating an index signal for enabling said phase-locked loop means to operate so that the latter means produces said output signal having a frequency related to said index signal when said electron beam begins scanning said run-in area and for controlling said means for generating gating pulses to supply said gating pulses to said gating means in phase alignment with respect to the scanning of said color elements when said electron beam begins scanning said image area, so that said gating means sequentially gates said respective color control signals in correspondence with the position of said electron beam in respect to said color elements.

4,316,217

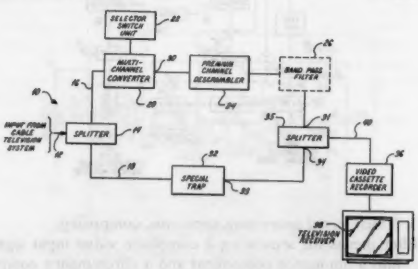
METHOD AND APPARATUS FOR CONNECTING A CABLE TELEVISION SYSTEM TO A VIDEO CASSETTE RECORDER

Jerome C. Rifken, 304 Edwards Dr., Fayetteville, N.Y. 13066

Division of Ser. No. 24,103, Mar. 26, 1979, Pat. No. 4,272,791. This application Dec. 1, 1980, Ser. No. 211,577

Int. Cl.³ H04N 7/10

U.S. Cl. 358—86 2 Claims



1. Apparatus for connecting a cable television system utilizing a multi-channel converter having a preselector switch and a preselected converter very high frequency output signal to a television receiver comprising:

input means for receiving a plurality of very high frequency television signals transmitted by said cable television system;

means for directing said transmitted signals through first and second conduits defining respectively first and second signal flow paths, with said converter box being disposed in said first flow path;

trap means including an output provided in said second flow path for eliminating said preselected converter output signal from the very high frequency signals transmitted by said cable television system;

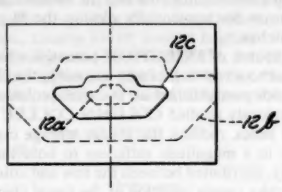
means connected to said first and second conduits for combining said preselected converter output signal and the very high frequency signals transmitted from the ouput of

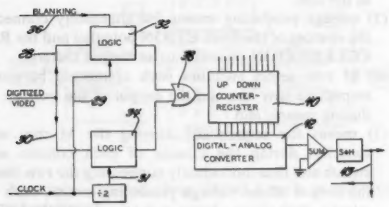
said trap means and for transmitting said combined signals to a television receiver.

4,316,218
VIDEO TRACKER

Donald L. Gay, Daytona Beach, Fla., assignor to The United States of America Government as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 28, 1980, Ser. No. 134,858
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—125 **5 Claims**





1. In a video tracker for viewing a distant target (**12**) and background scene (**13**) to produce a tracking window (**10**) having a leading edge and a trailing edge: the combination comprising

means for enhancing contrast between target video and background video, comprising a first amplifier (**80**) having an input for receiving digitized video signals produced by the tracker, a positive peak detector (**88**) and negative peak detector (**90**) receiving digital signals from the amplifier, addition-division device (**93**) receiving digital signals from the detectors and supplying an intermediate input digital voltage V_{INT} back to the input of the amplifier so that peak detector signals are centered on the V_{INT} signal, and comparator means (**98** and **99**) for comparing signals derived from the peak detectors with the digital signal produced by the amplifier to provide digitized output signals (**100**) representing enhanced contrast between the target and background scene;

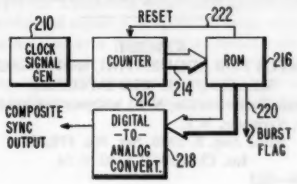
means for producing an analog signal (**43**) representing a video lock-on target center point, said signal-producing means including a first logic means (**32**) translating the aforementioned digitized output signals into digital signals representing the distance between a video window leading edge and the target leading edge, a second logic means (**34**) translating the aforementioned digitized output signals into digital signals representing the distance between the target leading edge and a point midway between the target edges, and means (**38, 40** and **42**) converting the last mentioned digital signals into a first analog signal (**43**) representing the target center point;

and means for deriving a signal representing changes in size of the target, comprising a target height counter circuit (**52**) that produces a second analog signal (**66**) related to target size, a second amplifier (**48**) summing the first and second analog signals into an output representing one edge of a video window, a third amplifier (**50**) differencing the first and second analog signals into an output representing another edge of a video window and ramp generator means (**72**) providing a sloping signal (**73**) that intersects the outputs from the second and third amplifiers.

4,316,219
SYNCHRONIZING CIRCUIT ADAPTABLE FOR VARIOUS TV STANDARDS

Terrence R. Smith, Mapleshade, and Frank J. Marlowe, Kingston, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jul. 17, 1980, Ser. No. 169,680
Int. Cl.³ H04N *5/06*
U.S. Cl. 358—150 **12 Claims**



1. A television synchronizing signal generator comprising:

memory means for storing information relating to the magnitude of at least one component of a composite synchronizing signal at each of a predetermined plurality of sampling points in each television frame; and

clock signal generating means coupled to said memory means for generating periodic sampling signals for recurrently addressing said memory means for reading said information from said memory for generating said component.

12. A television apparatus adapted for ready conversion among various television standards comprising:

memory means for storing information relating to the magnitude of at least one component of a composite synchronizing signal at each of a predetermined plurality of sampling points in each television frame; and

clock signal generating means coupled to said memory means for generating periodic sampling signals for recurrently addressing said memory means for reading said information from said memory for generating said component.

4,316,220
IF BANDPASS SHAPING CIRCUITS

Max W. Muterspaugh, Indianapolis, Ind., and Gerald E. Theriault, Hopewell, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 24, 1980, Ser. No. 190,278
Int. Cl.³ H04N *5/44;* **H03H** *9/00*
U.S. Cl. 358—196 **7 Claims**

4. A bandpass filter circuit comprising:

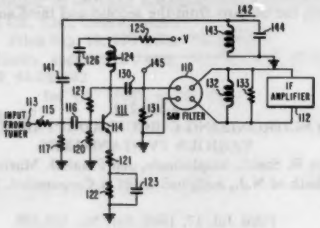
a source of electrical signals;

a surface acoustic wave filter having a first frequency response characteristic, and having an input coupled to said source of electrical signals and an output;

an output circuit coupled to said surface acoustic wave filter output;

means exhibiting a second frequency response characteristic and including a tuned circuit coupled between said source of electrical signals and said output circuit, for producing

at said output circuit a signal provided in accordance with a third frequency response characteristic corresponding to



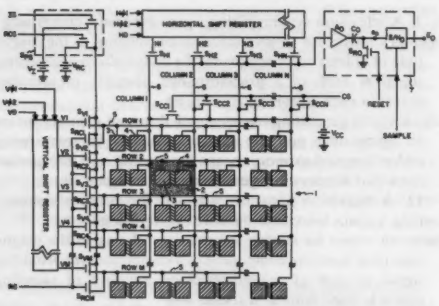
the sum of said second frequency response characteristic and said first frequency response characteristic.

4,316,221

APPARATUS FOR SEQUENTIAL ROW INJECTION READOUT OF CID IMAGERS

John M. Swab, Baldwinsville, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Aug. 5, 1980, Ser. No. 175,625
Int. Cl.³ H04N *5/30, 3/14*
U.S. Cl. 358—213 **6 Claims**



1. Apparatus for periodically reading image intensity information from M rows×N columns of charge storage sites in a CID array imager, said reading being accomplished by sensing the magnitudes of signal charges collected at the charge storage comprising a substrate of semiconductor material supporting a layer of insulating material on which are formed at each site a conductive row pad and a conductive column pad, each pad defining a capacitive cell comprising the pad itself and the underlying portions of the insulating layer and the semiconductor substrate, the row pads for each row of sites being interconnected by a conductive row line and the column pads for each column of sites being interconnected by a conductive column line, said apparatus comprising:

(a) means for applying ROW COLLECTION and COLUMN COLLECTION potentials to the row and column lines prior to sensing the signal charge at each site, said means including:

(1) a source of the ROW COLLECTION potential,

(2) a source of the COLUMN COLLECTION potential,

(3) M switches each connected between a respective row line and said source of ROW COLLECTION potential, and

(4) N switches each connected between a respective column line and said source of COLUMN COLLECTION potential,

said ROW COLLECTION and COLUMN COLLECTION potentials establishing charge storage capacities at the row and column cells of each site which are collectively sufficient to hold both a bias charge of predetermined magnitude and the signal charge collected between successive readings, said potentials further establishing a predetermined distribution of the bias charge between the row and column cells of each site; and

(b) means for sensing the magnitude of the signal charge at each site and producing an output voltage representative thereof, said means including:

(1) measuring means for measuring the difference between first and second potentials successively developed on each column line connected thereto,

(2) N column select switches each connected between a respective column line and the measuring means,

(3) means for sequentially closing the N column select switches,

(4) a source of INJECTION potential which, when applied to a row cell of any site while the charge storage capacity established at the site's column cell by the previously applied COLUMN COLLECTION potential exists, reduces the charge storage capacity in said site to a magnitude sufficient to hold the bias charge only, distributed between the row and column cells, and thereby causes injection of the signal charge contained in the site,

(5) voltage producing means for alternately connecting the sources of the INJECTION potential and the ROW COLLECTION potential to an output thereof,

(6) M row select switches each connected between a respective row line and the output of the voltage producing means, and

(7) means for sequentially closing the M row select switches during the closure of each column select switch and thus individually connecting the row lines to the output of the voltage producing means, each row select switch closure being maintained until the INJECTION potential and then the ROW COLLECTION potential are successively applied to the connected row line, thereby causing injection of the signal charges in the sites of the selected row followed by re-establishment of the predetermined bias charge distribution in said sites,

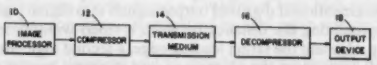
said measuring means producing each output voltage by measuring the difference between the potential on the connected column line prior to injection of the charge in each site in the column and the potential on said line after the predetermined distribution of bias charge has been re-established in the site.

4,316,222

METHOD AND APPARATUS FOR COMPRESSION AND DECOMPRESSION OF DIGITAL IMAGE DATA

Ambati Subramaniam, Waterloo, Canada, assignor to NCR Canada Ltd. - NCR Canada LTEE, Mississauga, Canada

Filed Dec. 7, 1979, Ser. No. 101,347
Int. Cl.³ H04N *7/12, 1/00*
U.S. Cl. 358—261 **22 Claims**



1. An apparatus for the processing of digital data derived from an image, comprising:

means for converting said digital data into varying run lengths of a first type data indicia and a second type data indicia;

means for counting said first and second types of data indicia of each run length;

means responsive to said counting means, for forming a plurality of groups, with each of said groups comprising a

section of data representing said first type data indicia and a section of data representing said second type data indicia, said groups constituting digital symbols representative of each of said groups;

storage means for storing a plurality of code words which are representative of each of said symbols;

means for causing said code words to be generated from said storage means;

and means for outputting said generated code words over a transmission medium.

4,316,223

RECORDING OF DIGITAL SIGNALS

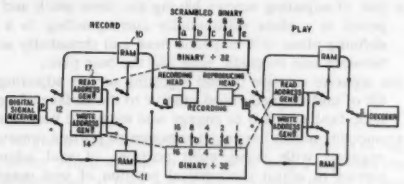
John L. E. Baldwin, 65 Lakewood Rd., Chandlers Ford, Eastleigh, Hampshire, and John G. S. Ive, 22 Radley Lodge, 25 Inner Pk. Rd., London SW19, both of England

Continuation-in-part of Ser. No. 923,973, Jul. 12, 1978, abandoned. This application Mar. 10, 1980, Ser. No. 128,861

Claims priority, application United Kingdom, Jul. 14, 1977, 29691/77

Int. Cl.[3] **G11B** *5/09*

U.S. Cl. 360—39 **14 Claims**



1. Apparatus for recording digital signals in the form of words comprising

(a) means for receiving incoming digital signals;

(b) memory means (**10,11**) connected with said receiving means;

(c) write address generator means (**14**) for causing the incoming digital signals to be stored in said memory means in the form of words in a first sequence;

(d) read address generator means (**17**) for causing the digital signals in said memory means to be read out from said memory means in a second sequence different from the first sequence, said read and write address generator means each including dividing circuits (**40,42**) each having a divisor which is a function of the number of digital signals in a block of said signals;

(e) control means for selectively connecting said write address generator means and said read address generator means sequentially to said memory means; and

(f) recording means connected with said memory means for recording on a given medium the digital signals read out from said memory.

4,316,224

MAGNETIC TAPE REPRODUCER-RECORDER WITH MEANS FOR TAPE SEGMENT IDENTIFYING AND LOCATING

Jens Hansen, and Thomas Schäfer, both of Hildesheim, Fed. Rep. of Germany, assignors to Blaupunkt-Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Jul. 23, 1979, Ser. No. 59,661

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1978, 2832337

Int. Cl.[3] **G11B** *5/02, 27/32;* **H04N** *5/795*

U.S. Cl. 360—72.2 **2 Claims**

1. A magnetic-tape-using recorder-reproducer apparatus for information signals having means for recording and for playing back information signals at a first predetermined tape transport velocity, including means for transporting the tape at said first velocity, and also means for transporting the tape selectively in forward or reverse direction at a velocity much higher than said first velocity, and further comprising:

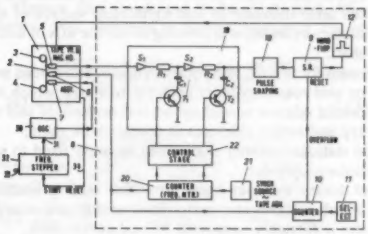
means for recording additional signals of an alternating current of the same constant frequency but of different pulse lengths at different tape segments for identifying different portions of said information signals respectively recorded on said tape segments in such a manner that the frequency spectrum of said additional signals is substantially entirely below the lower limit of the frequency spectrum of the playback of said information signals when said information signals are played back at said first velocity of tape transport;

means (**5**) for picking up the recorded additional signals during operation of said tape transporting means at said higher velocity in either direction of transport, and

means including a settable count state standard (**17***a*) for storing an indication of the pulse length of additional signals corresponding to a tape segment to be located;

means (**17**) for comparing additional signals picked up by said additional signal pick-up means using said count state standard (**17***a*) as a pulse length criterion to provide a recognition signal;

switching means (**8**) connected to said tape transporting means for interrupting the operation of said higher velocity tape transporting means in response to said recognition signal and then putting into forward operation said first-velocity tape transporting means,



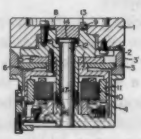
said comparing means including a resettable counter (**13**), a resettable shift register (**14**) and a buffer store (**16**) for measuring the pulse length of said additional signals as picked up by said picking up means, said shift register (**14**) being connected for being advanced by synchronizing pulses of a frequency higher than any of said additional signals and corresponding, in repetition interval, to the displacement of the tape by said tape transport means, said picked up additional signals being furnished as a counting input to said counter (**13**) and as resetting signals to said shift register (**14**), the output of said shift register being furnished as resetting signals to said counter and being supplied to an input of said buffer store (**16**) so as to cause the latter to store the count state of said counter (**13**) existing immediately before resetting thereof, said comparing means being connected to compare the content of said count state standard (**17***a*) with the content of said buffer store (**16**) for causing said switching means (**8**) to switch over the tape transport from said higher velocity tape transport means to said first velocity tape transport means.

4,316,225

ROTARY HEAD ASSEMBLY FOR MAGNETIC RECORDING AND REPRODUCING DEVICE

Teruo Maruyama, Neyagawa; Minoru Koda, Hirakata; Masato Morimoto, Kadoma, and Toshitsugu Inoue, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 29, 1980, Ser. No. 154,288
Claims priority, application Japan, Jun. 5, 1979, 54-70919
Int. Cl.[3] G11B 5/52, 15/60, 21/04
U.S. Cl. 360—107 1 Claim



1. A rotary head assembly for a magnetic recording and reproducing device of the type having a stationary center shaft whose one end is securely fixed, comprising:

a stationary cylinder having a cylindrical surface coaxial with said center shaft,

a rotary cylinder which has a coefficient of thermal expansion different from that of said center shaft, being positioned adjacent to the end face of said stationary cylinder, having a cylindrical surface which is coaxial with said cylindrical surface of said stationary cylinder and having the same diameter as said cylindrical surface of said stationary cylinder, and rotating about the axis of said center shaft,

a means for driving said rotary cylinder, and a head mounted on said rotary cylinder adjacent to a tape which is transported relative to said cylindrical surfaces of said stationary and rotary cylinders in contact with them,

said stationary center shaft being securely fixed to said stationary cylinder,

said rotary cylinder being provided with a bearing hole which receives said center shaft so that said rotary cylinder is rotatably supported by said center shaft,

a lubricating liquid contained between said bearing hole and said center shaft, thereby providing a hydraulic bearing,

the portion of said hydraulic bearing in the vicinity of its thrust load carrying point being sealed,

characterized in that

the end face of said stationary cylinder opposite to the end face thereof in opposed relationship with said rotary cylinder is selected as a reference position or surface (S); and dimensions and materials of component parts of said rotary head assembly are so selected that the following condition can be satisfied:

$$\Delta H < \epsilon$$

where ΔH is the thermal expansion between said head and said thrust load carrying point and is expressed by

$$\Delta H = \Delta l_3 - \Delta l_2 - \Delta l_4 - \Delta l_1 \ \mu m/°C.$$

where

H is the distance between said head and said reference point or surface,

l_1 is the distance between said head and said thrust load carrying point,

l_2 is the distance between a fixed point on said center shaft and said reference point or surface,

l_3 is the axial length of said center shaft between said fixed point and said thrust load carrying point, and

l_4 is a width of said stationary cylinder which contributes to said thermal expansion ΔH, and

ϵ is equal to $8.57 \times 10^{-3} \times Tp$ μm/°C.

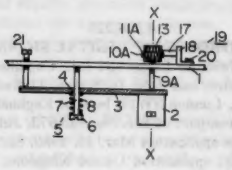
where Tp is the track pitch of the tape.

4,316,226

HEAD ADJUSTMENT MEANS FOR A TAPE RECORDER

Niro Nakamichi, Higashikurume, and Hideo Kawachi, Ichikawa, both of Japan, assignors to Nakamichi Corporation, Tokyo, Japan

Filed Dec. 26, 1979, Ser. No. 107,422
Claims priority, application Japan, Dec. 26, 1978, 53/181083[U]
Int. Cl.[3] G11B 5/56, 5/48, 21/24
U.S. Cl. 360—109 9 Claims



1. Head adjustment means for a tape recorder having a base plate and a magnetic head comprising:

a pair of adjusting screws having the same pitch and disposed in a plane substantially corresponding to a gap defining plane of a magnetic head and threadedly acting between said magnetic head and the base plate,

the separate rotation of said adjusting screws adjusting the tilt of said magnetic head relative to the surface of a magnetic tape which is to engage said magnetic head; and

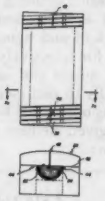
connecting means having an engagement portion removably engaged with engagement portions of said adjusting screws to adjust the vertical position of said magnetic head relative to said magnetic tape by the simultaneous rotation of said adjusting screws by said connecting means.

4,316,227

MULTITRACK MAGNETIC HEAD EMPLOYING DOUBLE HELIX STRUCTURE

James U. Lemke, Del Mar, and William W. French, Cardiff-by-the-Sea, both of Calif., assignors to Eastman Technology, Inc., Rochester, N.Y.

Filed Oct. 9, 1979, Ser. No. 83,036
Int. Cl.[3] G11B 5/27, 5/20, 5/12
U.S. Cl. 360—121 11 Claims



1. A multitrack magnetic head comprising:

(a) first and second discrete gapped cores each of which has respective first and second core poles, each of said cores being so twisted about a common axis that the core poles which define the core gaps are displaced with respect to each other along said axis, the core poles of said first core being separated from each other and disposed to reside in two different planes that are perpendicular to said axis, and the core poles of said second core being also separated from each other and disposed to reside in two different planes that are perpendicular to said axis; and

(b) a pole tip piece comprising first and second pairs of pole tips which together define a high reluctance transducer gap line,

said first pair of pole tips being in skewed relation with respect

to said gap line and being magnetically coupled respectively via low reluctance paths to the poles of the first core, and

the second pair of poles tips being also in skewed relation with respect to said gap line and being magnetically coupled respectively via low reluctance paths to the poles of the second core.

4,316,228

MAGNETIC HEAD

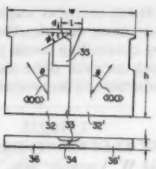
Hideo Fujiwara, Tachikawa; Mitsuhiro Kudo, Hamuramachi; Teizou Tamura, Katsuta; Nobuyuki Sugishita, Yokosuka; Yoshihiro Shiroishi, Higashimurayama; Takeshi Kimura, Kokubunji; Kiminari Shinagawa, Shiroyamachi, and Noriyuki Kumasaka, Ohme, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 3, 1979, Ser. No. 100,027

Claims priority, application Japan, Mar. 23, 1979, 54/33316

Int. Cl.³ G11B *5/251, 5/14*

U.S. Cl. 360—127 **7 Claims**



1. A magnetic head comprising two magnetic blocks of high permeability which oppose to each other with a gap intervening therebetween, at least one of said magnetic blocks of high permeability being made of a single-crystal Mn—Zn ferrite, a {1 1 0} plane of the at least one single-crystal Mn—Zn ferrite being made substantially parallel to a principal magnetic circuit-forming plane, an angle θ between a <1 0 0> direction existent within said {1 1 0} plane and a plane forming said gap being made 5°–40° or 80°–120°, a glass being attached by fusion onto at least surfaces of the high-permeability magnetic block in the vicinities of sides of said gap, said glass having a lower contraction rate than said ferrite in a case of lowering the temperatures thereof from a glass setting temperature to a room temperature, and wherein a magnetocrystalline anisotropy constant K_1 of said single-crystal Mn—Zn ferrite is -2×10^4 to 1×10^4 erg/cc.

4,316,229

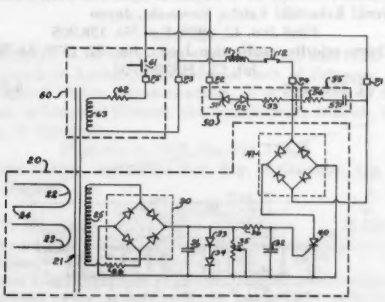
ELECTRIC CURRENT DETECTOR CIRCUIT

William F. Helwig, Jr., Downers Grove, Ill., assignor to Avtec Industries, Inc., Downers Grove, Ill.

Filed Jul. 16, 1979, Ser. No. 57,944

Int. Cl.³ H02H *3/16*

U.S. Cl. 361—42 **4 Claims**



1. An electric current detector circuit for controlling the operation of equipment comprising:

detector means for sensing a leakage of current and providing a first signal indicative of the current leakage condition;

said detector means operatively positioned with respect to at least one wire for initiating said first signal;

switching means connected to a source of electrical power and responsive to said first signal to generate a second signal;

said switching means includes a silicon controlled rectifier adapted to receive said first signal;

said switching means further includes a full-wave bridge coupled to said silicon controlled rectifier which upon the reception of said first signal functions as an ac switch to thereby generate said second signal;

disabling means responsive to said second signal for deactivating the operation of the equipment;

reception means operatively coupled to receive a warning signal;

said reception means being connected to said disabling means and acting to generate a warning control signal for alternatively deactivating the operation of the equipment; and

said reception means including diode means to limit the voltage of the warning signal applied thereto.

4,316,230

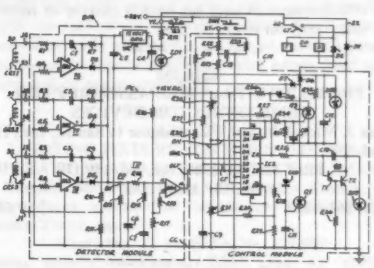
MINIMUM SIZE, INTEGRAL, A.C. OVERLOAD CURRENT SENSING, REMOTE POWER CONTROLLER WITH RESET LOCKOUT

James E. Hansen, Oak Creek, and Walter L. Rutchik, Wauwatosa, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Oct. 9, 1979, Ser. No. 83,159

Int. Cl.³ H02H *3/093*

U.S. Cl. 361—114 **6 Claims**



1. In combination with an electrical system supplying a load device from an electrical power supply line having overload current sensing power control means for disconnecting said load device from said power supply line including a latching relay having contacts for controlling connection of said line to said load device and set and trip coils and a cutthroat contact in circuit with said coil that closes when said relay is set and reopens when said relay is tripped, means responsive to an overload current on said line for providing an overload trip signal, and control circuit means comprising a set switch and an integrated circuit dual multiplexer having first and second parts including sets of multiplexer inputs associated with first and second multiplexer outputs, respectively, a low enable input, and a pair of common select inputs for controlling said first and second multiplexer outputs, said first part of said dual multiplexer being operable to control setting of said relay in response to the Boolean equation:

$$SET=UNL\cdot\overline{CT}\cdot\overline{OLT}\cdot ON$$

wherein UNL is a combined status "on" signal indicative that the system has not latched into its tripped state and said set switch is "on", and $\overline{CT}$ is a cutthroat contact open indica-

tive signal at said common select inputs, $\overline{OLT}$ is an overload trip "off" indicative signal at said low enable input, and ON is a set switch "on" indicative signal at the correspondingly selected input of said first set multiplexer inputs, and said second part of said dual multiplexer inputs, and said second part of said dual multiplexer being operable to control tripping of said relay in response to the Boolean equation:

$$TRIP=UNL \cdot CT \cdot OLT+\overline{UNL} \cdot \overline{CT} \cdot ON+\overline{UNL} \cdot CT$$

wherein UNL is said combined status signal and CT is a cutthroat contact closed indicative signal at said common select inputs and OLT is an overload trip "on" signal at the correspondingly selected input of said second set of multiplexer inputs or wherein $\overline{UNL}$ is a combined status "off" signal indicative that the system has either latched into its tripped state or said set switch is "off" and $\overline{CT}$ is said cutthroat contact open indicative signal at said common select inputs and ON is said set switch "on" indicative signal; or wherein said signals $\overline{UNL}$ and CT are at said common select inputs, the improvement comprising:

reset lockout means incorporated in said control circuit means for preventing resetting of said relay from said set switch following an overload trip comprising:

means responsive to an overload trip signal for introducing a reset lockout signal that alters said combined status "off" signal $\overline{UNL}$ to a modified combined status "off" signal $\overline{UNL}'$ additionally indicative that the system has latched into its reset lockout state, thus inhibiting said set combined status signal UNL at the corresponding select input of said multiplexer and rendering said set switch ineffective to cause resetting of said relay;

a reset switch;

and means responsive to momentary operation of said reset switch for disabling said inhibiting means while said set switch is held open thereby to re-establish the effectiveness of said set switch closure to reset said relay after an overload trip.

4,316,231

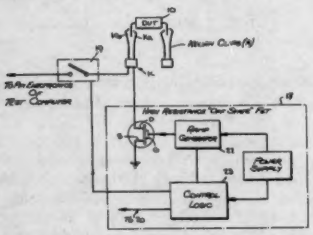
PROTECTIVE TRANSFER ASSEMBLY FOR SEMICONDUCTOR DEVICES

Thomas J. Michel, Miami, Fla., assignor to Santek, Inc., Hollywood, Fla.

Filed Jun. 13, 1980, Ser. No. 159,179

Int. Cl.³ H05F *3/02*

U.S. Cl. 361—212 **10 Claims**



1. A transfer assembly interposable between a storage tube containing semiconductor devices having leads extended therefrom and a processing station therefor to effect a controlled static discharge of each device taken from the tube to prevent a destructive discharge, said assembly comprising:

A. an insulating track for receiving semiconductor devices from the storage tube;

B. a set of contacts mounted on the track to engage the leads of each device received thereby; and

C. a static discharge system having a field effect transistor whose high-impedance drain-source channel is connected between a respective track contact and ground, and means to apply to the gate of the transistor a ramp voltage at a predetermined slew rate, causing the impedance of said channel to go from its normally high value to a low value to provide a controlled discharge path for any static charge carried by the engaged lead.

4,316,232

ELECTRIC FENCE CONTROLLERS

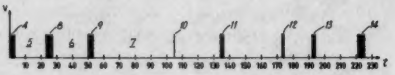
Dougald S. M. Phillips; Carol L. E. Phillips, and David L. D. Phillips, all of 45 Fifth Ave., Hamilton, New Zealand

Filed May 5, 1980, Ser. No. 146,603

Claims priority, application New Zealand, May 7, 1979, 190389; Jul. 31, 1979, 191117

Int. Cl.³ H05C *1/04*

U.S. Cl. 361—232 **9 Claims**



1. An electric fence energiser capable of supplying pulse sequence to one or more electric fences, said electric fence energiser including controlling means to provide in use during normal operation an irregular pulse sequence the composition of which is unpredictable to an animal.

4,316,233

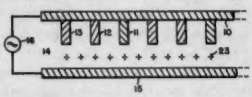
SINGLE PHASE ELECTROHYDRODYNAMIC PUMP

John C. Chato, 714 W. Vermont Ave., Urbana, Ill. 61801, and Joseph M. Crowley, 506 S. Elm St., Champaign, Ill. 61820

Filed Jan. 29, 1980, Ser. No. 116,498

Int. Cl.³ B05B *5/02*

U.S. Cl. 361—233 **8 Claims**



1. An apparatus for inducing pumping of a charged medium, said apparatus consisting of an electrically conducting electrode connected to a souce of varying voltage, and separated at least partially from said medium by a non-uniform semi-insulating covering arranged so that the electrical relaxation time of said covering increases from lower to higher values over some finite section of said covering in such a way as to set up a travelling electric field which exerts a Coulombic force on said medium.

4,316,234

ENCLOSED SWITCHBOARDS

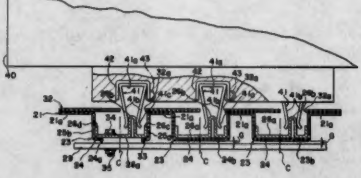
Masatomo Takagi, Hachioji; Mitsuo Ogaki, Fuchu, and Sadao Hikita, Hachioji, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 12, 1980, Ser. No. 158,905

Claims priority, application Japan, Jun. 22, 1979, 54-78041

Int. Cl.³ H02B *1/04*

U.S. Cl. 361—342 **9 Claims**



1. In an enclosed switchboard having a vertical bus bar supported by an insulating cover and unit chambers situated in

front of said vertical bar and tiered one above the other and accommodating unit devices, each unit device having a stab-type connector including a tongue-shaped contact which establishes electrical contact with said vertical bus bar, the improvement in which said insulating cover includes a vertically extending channeled portion having a bed and side walls to define a bus way on the front side of said insulating cover, said vertical bus bar includes a web in flat engagement with the front face of said bed of said channeled portion, a vertically extending protrusion protruding from said web forwardly, and a flange extending from one of the edges of said web and being in flat engagement with the inner face of one of said side walls of said channeled portion, said protrusion being positioned close to said flange so that as said contact moves sidewardly away from said protrusion due to a short circuit current flowing through said contact it is brought into contact with said flange.

4,316,235

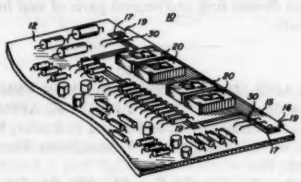
MOVABLE PRINTED CIRCUIT BOARD DISPLAY

Leonard Latasiewicz, Hoffman Estates, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 31, 1980, Ser. No. 136,010

Int. Cl.³ H05K *1/18*

U.S. Cl. 361—408 **4 Claims**



1. An improved printed circuit board arrangement with a movable display module comprising in combination:

a printed circuit board having a breakaway section of generally T-shaped configuration having a base and spaced apart ends;

display means supported by and electrically connected to said breakaway section;

a plurality of jumper members interconnecting said printed circuit board and said breakaway section along the base and ends of the T-shaped breakaway section; and

said jumper members being arranged in a substantially parallel array such that said breakaway section with said display means can be moved to a different parallel plane relative to said board member in parallelogram fashion after said breakaway section has been physically broken away from said printed circuit board so as to selectively control the viewing of said display means apart from said board member.

4,316,236

HINGED SUPPORT FOR ELECTRICAL DEVICES

Ernst-Friedrich Lechner; Otto Meusel, both of Erlangen, and Meinhardt Müller, Grossenseebach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 6, 1979, Ser. No. 72,638

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1978, 2842034

Int. Cl.³ H05K *7/20*

U.S. Cl. 361—429 **15 Claims**

1. A swinging mounting for electronic and electrical devices comprising:

at least two structurally similar rectangular frames adjacent to each other in spaced parallel relationship, each frame comprising a top leg, a bottom leg and two side legs, defining a plane, and

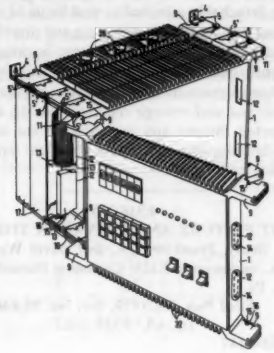
plural hinge joints connecting each side of one frame to the adjacent side of the other frame, each joint comprising:

at least a first right-angled lug mounted on one frame,

second and third right-angled lugs mounted on the second frame opposite the first lug, the second and third lugs being spaced apart to provide a slot for receiving a hinge bar, each of the lugs extending laterally outward in the plane of the frame on which the lug is mounted,

matching holes in the lugs,

a hinge bar interconnecting the right-angled lugs in each joint, each hinge bar comprising two ends and having a hole in each end which matches the holes in the right-angled lugs and one end of the hinge bar extending into the slot, and



first and second pivot pins in the holes in each hinge bar for connecting one end of the hinge bar to the first lug and the other end of the hinge bar to the second and third lugs, the first pin in each hinge bar on one side of the frame being easily removable and the second pin in each hinge bar on said one side of the frame being either fixed against removal or easily removable, and the pins in each hinge bar at the other side of the frame being either fixed against removal or easily removable.

4,316,237

LIGHTING FIXTURE FOR USE IN MEDICAL OPERATIONS AND THERAPEUTIC TREATMENT

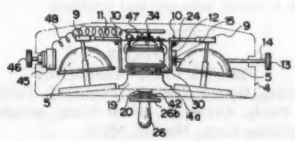
Isao Yamada; Mitsuyuki Ikeda, and Yumiko Komori, all of Tokyo, Japan, assignors to Yamada Iryo Shomei Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1980, Ser. No. 134,580

Claims priority, application Japan, Jun. 11, 1979, 54-78336[U]; Sep. 26, 1979, 54-132007[U]

Int. Cl.³ F21V *19/02*; F21S *1/14*

U.S. Cl. 362—33 **7 Claims**



1. A multiple lamp lighting fixture for use in therapeutic treatment, said lighting fixture comprising:

(a) lamp housing supporting means having a lamp housing tiltably attached thereto for supporting said lamp housing thereon and allowing movement of said lamp housing relative to said lamp housing supporting means;

(b) a plurality of lamps mounted concentric to the vertical axis of said lamp housing within said lamp housing, said lamps being adjustable with respect to the vertical axis of said lamp housing;

(c) a centrally located focus adjusting shaft vertically se-

cured along the central axis of said lamp housing within said lamp housing;

(d) a rotatable transformer housing having said focus adjusting shaft running vertically through the center thereof and being attached to said focus adjusting shaft;

(e) a plurality of drive rods connecting said rotatable transformer housing to corresponding ones of said lamps for simultaneously tilting said lamps to focus light beams which are emitted by said lamps along the central axis of said lamp housing when said transformer housing is rotated;

(f) a manipulating handle having engagement means for being detachably attached to said focus adjusting shaft for rotating said transformer housing and thereby causing said plurality of lamps within said lamp housing to tilt; and

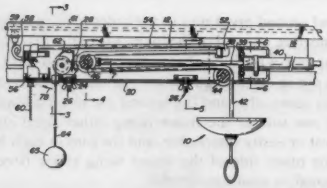
(g) a transformer mounted within said transformer housing, said transformer having a voltage regulator connected thereto and said voltage regulator having a control knob connected thereto and mounted on the outside of said lamp housing for controlling the light intensity of said plurality of lamps.

4,316,238

LIGHT FIXTURE AND ELEVATOR THEREFOR

Donald A. Booty, Frankfort, Ill., and David Weisburg, Elkins Park, Pa., assignors to Kidde Consumer Durables Corp., Bala Cynwyd, Pa.

Filed Nov. 19, 1979, Ser. No. 95,836
Int. Cl.³ F21S *1/02*
U.S. Cl. 362—147 **14 Claims**



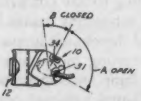
1. Apparatus comprising a frame adapted to be attached to a ceiling, said frame supporting a light fixture elevator, said elevator including a horizontally reciprocal carriage, a light fixture supported by said carriage and being in an elevated position when the carriage is in a first position and being at a lower elevation when the carriage is in a second position, a flexible conductor having one end connected to said fixture and an intermediate portion extending around a part of said carriage so that movement of the carriage controls the elevation of the fixture, means biasing said carriage to said first position, and said elevator including means for guiding said carriage as it moves between said positions.

4,316,239

TRUNK LAMP ASSEMBLY

Louis G. Cass, Detroit; Nicholas Poleschuk, Farmington, and Samuel Purdy, Ortonville, all of Mich., assignors to Beta Manufacturing Corp., Warren, Mich.

Filed Jul. 16, 1979, Ser. No. 57,575
Int. Cl.³ B60Q *3/06*; H01H *35/02, 29/20*
U.S. Cl. 362—155 **12 Claims**



1. A trunk lamp assembly comprising

a housing having a first generally tubular part having open ends,

said first part having an axially extending slot,

a bracket having an offset portion extending into said slot,

said bracket having means exposed to the interior of said first part whereby it may receive an electric bulb and hold the bulb in position in the first part with its axis along the axis of said first part,

a second part,

said second part being generally tubular and having a closed end wall,

said first and second part having interengaging means for holding said parts in assembled relation,

said second part having a portion engaging said bracket to hold said bracket in position in said slot of said first part,

said second part having an opening in a wall thereof,

a terminal extending through said opening,

said terminal having a contact portion,

a contact positioned in said second part,

said contact having a first portion extending axially into said first part for engaging with the base of a lamp bulb,

said contact having a second contact portion for providing a contact with a capsule type mercury switch,

and a capsule type mercury switch engaging said contact portion of said terminal and said second contact portion of said contact,

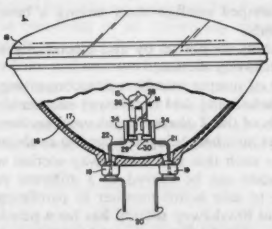
said mercury switch having its axis extending transversely to the axis of said first and second parts of said housing and said bulb.

4,316,240

INNER LAMP MOUNT ASSEMBLY FOR VEHICULAR HEADLAMP AND SIMILAR LIGHTING APPARATUS

Elam Pitkjaan, Cedar Grove, and James F. Endler, East Hanover, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 881,473, Feb. 27, 1978, Pat. No. 4,241,391.
This application May 6, 1980, Ser. No. 146,996
Int. Cl.³ F21V *29/00*
U.S. Cl. 362—267 **6 Claims**



1. An integral lamp-mount assembly for use in a vehicular headlamp and similar lighting units that have a concave reflector component, said lamp-mount assembly comprising;

a pair of substantially rigid main conductors that (a) are adapted to be fastened to terminal means carried by the reflector component of the headlamp and (b) have end portions which are disposed in spaced side-by-side relationship,

a baseless type incandescent lamp of compact size having an envelope that contains a filament and is terminated by a hermetic seal from which a pair of substantially rigid lead-in wires extend, said lead-in wires being anchored in the hermetic seal and connected to the filament and said hermetic seal having a pair of side edges, and

means mechanically and electrically coupling the compact incandescent lamp to the end portions of the main conductors comprising a pair of spaced clip-like holders of sheet metal that are disposed in snug interfitted embracing relationship with the respective side edges of the hermetic seal, are fastened to the end portions of the respective main conductors, and have segments that extend laterally

along the end face of the hermetic seal,

the laterally-extending segments of each of said clip-like holders being seated against the end face of the hermetic seal and also being fastened to the respective lead-in wires of the compact lamp and thereby serving as positioning and electrical-connector means for the compact incandescent lamp.

4,316,241

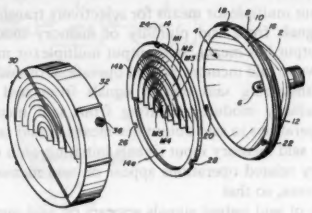
METHOD AND APPARATUS FOR CONTROLLING REFLECTED ENERGY INCLUDING DUAL LIGHT TRANSMITTING MEANS FOR PRODUCING A SPOT TO FLOOD CONFIGURATION

John E. Gulliksen, Shrewsbury, Mass., assignor to Koehler Manufacturing Company, Marlborough, Mass.

Filed Dec. 13, 1979, Ser. No. 103,097

Int. Cl.[3] **F21V** *13/04;* **F21L** *23/00;* **F21V** *17/02*

U.S. Cl. 362—268 **8 Claims**



1. Luminaire apparatus for controlling reflected radiant energy to produce a spot to flood configuration, said apparatus comprising a housing body having a reflector surface, lamp means mounted in the reflector body at the focal point of the reflector surface, a dual light transmitting unit supported at an outer side of the housing body, said dual light transmitting unit including a light transmitting disk component of circular shap fixed to the housing and a disk cover component mounted for rotative movement about the central axis of the housing and in constantly maintained relationship against the disk component, said light transmitting disk component being formed throughout more than 180° of its extent with truncated arcuate mating portions which present V-shaped surfaces whose crests occur in concentrically spaced apart relation to one another, said rotatably mounted disk cover component formed at an inner side thereof throughout more than 180° of its extent with truncated arcuate mating portions, said mating portions having V-shaped surfaces which are complimentary to the V-shaped surfaces of the disk component and which are rotatable into and out of full engagement with the V-shaped surfaces of the disk component to provide for at least some portions of the V-shaped surfaces being in constantly maintained relationship against the disk component.

4,316,242

WIDE INPUT RANGE, TRANSIENT-IMMUNE REGULATED FLYBACK SWITCHING POWER SUPPLY

Dominick Colangelo, Cammillus; George F. Pfeifer, Liverpool, and Gary B. Schumacher, Syracuse, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 4, 1980, Ser. No. 184,062

Int. Cl.[3] **H02M** *3/335*

U.S. Cl. 363—21 **15 Claims**

1. A regulated flyback switching mode power supply for operation from an unfiltered DC voltage source, said power supply comprising:

a transformer having at least a primary winding;

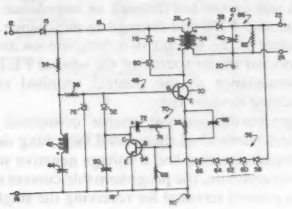
a controlled switching element having a pair of main electrodes and a control electrode, said switching element main electrodes being connected in series with said primary winding so as to controllably energize said primary winding from the voltage source;

biasing circuitry connected to said control electrode for initially causing said switching element to turn ON such that an increasing current flows through said primary winding and a correspondingly increasing magnetic field is produced by said primary winding, the rate of increase being at least determined by the source voltage and the inductance of said primary winding;

an element for sensing the amount of current flow through said transformer primary winding when said switching element is ON;

circuitry coupled to said control electrode for establishing a variable current limit value;

circuitry responsive to said element for sensing current flow and being connected to said control electrode for causing said switching element to turn OFF when sensed current reaches the established current limit value, such that the magnetic field produced by said primary winding collapses and said power supply is readied for another switching cycle, said power supply continuously oscillating with a period and duty cycle determined by the source



voltage, the primary winding inductance, and the current limit value;

an output network connected to said transformer, said output network including a filter capacitor and a rectifier polarized to draw current from said transformer to charge said filter capacitor to an output voltage from voltage induced when said switching element turns OFF; and

a negative feedback arrangement responsive to the output voltage and coupled to said circuitry for establishing a variable current limit value, said negative feedback arrangement varying the established current limit value as an inverse function of output voltage.

4,316,243

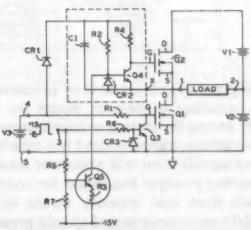
POWER FET INVERTER DRIVE CIRCUIT

William R. Archer, Fort Wayne, Ind., assignor to General Electric Company, Salem, Va.

Filed Dec. 17, 1979, Ser. No. 104,013

Int. Cl.[3] **H02M** *7/537;* **H03K** *17/687*

U.S. Cl. 363—132 **8 Claims**



1. In an inverter including at least first and second enhancement type, N-channel power FETs, each FET having a gate electrode, a source electrode, and a drain electrode, the first and second FETs being connected in push-pull relation such that the drain electrode of the first FET and the source electrode of the second FET are connected in common to an inverter output terminal; the source electrode of the first FET

and the drain electrode of the second FET each connected to a respective end terminal of a center-tapped DC voltage source, the source electrode of the first FET being circuit common, the inverter output terminal and the center tap of the center-tapped DC voltage source being adapted for connection to a load, means for driving the respective FETs from a single pulse signal, comprising:

a first switching device connected across the gate and source electrodes of the first FET, and including a control terminal for receiving the single pulse signal;

a first DC voltage source for providing energy to turn on the first FET, the first DC voltage source having its high side connected to the gate electrode of the first FET through an impedance and its low side connected to the source electrode of the first FET;

a second switching device connected across the gate and source electrodes of the second FET, and including a control terminal;

a second DC voltage source for providing energy to turn on the second FET, the second DC voltage source having its high side connected through an impedance to the gate of the second FET and through an impedance to the control terminal of the second switching device and its low side connected to the source of the second FET and through an impedance to the control terminal of the second switching device; and

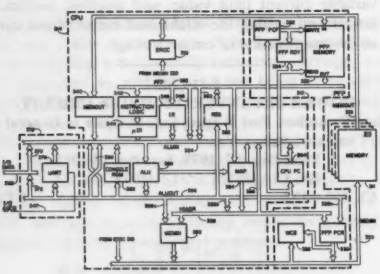
a programmable current source connected between the control terminal of the second switching device and one of circuit common and a voltage negative with respect to circuit common, the programmable current source including a control terminal for receiving the single pulse signal through an impedance.

4,316,244

MEMORY APPARATUS FOR DIGITAL COMPUTER SYSTEM

David S. Grondalski, Hopkinton, Mass., assignor to Data General Corporation, Westboro, Mass.

Filed Nov. 8, 1978, Ser. No. 959,038
Int. Cl.³ G06F *9/38*
U.S. Cl. 364—200 **18 Claims**



1. In a computer system capable of processing data signals, said system including process or means for processing said data, memory means for storing at least instructions for use by said processor means, memory input bus means for conducting memory input signals from said processor means to said memory means, memory output bus means for conducting memory output signals from said memory means to said processor means, and I/O means connected to said processor means for communicating system input signals into said processor means from outside of said system and for communicating system output signals to outside of said system from said processor means, said memory means comprising:

memory input means for receiving said memory input signals from said input bus means;

a plurality of memory modules, each module of said plurality of memory modules connected from said memory input means and capable of performing memory related operations concurrently with and independently of performance by all other modules of said memory related operations, and said each module of said plurality of memory modules capable of completing each of said memory related operations within a uniform predetermined time interval;

memory control means connected from said input means and deriving control signals from first certain said memory input signals for providing memory control signals to said memory modules, said memory control means providing certain said memory control signals to said modules for selecting single said modules from said plurality of memory modules and for initiating said memory related operations of said selected single modules in the same sequence as said memory input signals initiating each of said memory related operations appear on said memory input bus means; and

output multiplexor means for selectively transferring output signals from said plurality of memory modules to said output bus means, said output multiplexor means responsive to said memory related operations of said modules for transferring said output signals from said plurality of memory modules resulting from said memory related operations to said output bus means in said same sequence as said memory input signals initiating each of said memory related operations appear on said memory input bus means, so that

each of said output signals appears on said memory output bus means a said uniform predetermined time interval after a corresponding one of said memory input signals appears n said input bus means.

4,316,245

APPARATUS AND METHOD FOR SEMAPHORE INITIALIZATION IN A MULTIPROCESSING COMPUTER SYSTEM FOR PROCESS SYNCHRONIZATION

Duc Luu; Philippe-Hubert deRivet, both of Paris; John J. Bradley, Garches, all of France, and Benjamin S. Franklin, Cambridge, Mass., assignors to Compagnie Honeywell Bull, Paris, France

Continuation of Ser. No. 528,812, Dec. 2, 1974, abandoned. This application Dec. 7, 1978, Ser. No. 967,515
Claims priority, application France, Nov. 30, 1973, 73 42696
Int. Cl.³ G06F *9/46*
U.S. Cl. 364—200 **7 Claims**

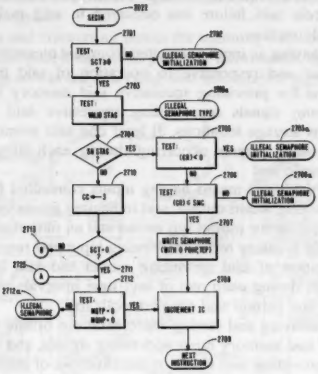
5. In an electronic data processing apparatus of the type including data elements in the form of semaphores stored in a memory member wherein a queue of representations of processes awaiting the occurrence of a particular kind of event are held in a memory member of said apparatus, each of said data elements having a tally field representing depending upon its value one of (a) the number of process representations in said queue and (b) the number of times said particular kind of event has occurred or the number of resources awaiting processes, a method of initializing said data elements or returning said data elements to a preloaded value depending upon semaphore type, comprising the steps of:

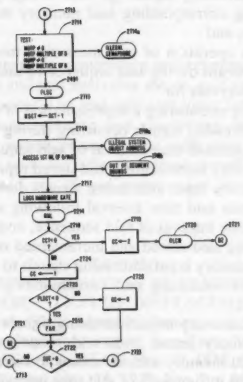
retrieving said data element from the memory member;

testing the tally field of the data element retrieved from the memory member and in response generating a first electrical signal when said tally field represents the number of process representations in said queue and a second electrical signal when said tally field represents either the number of times said particular kind of events has occurred or the number of resources awaiting processes;

in response to said second signal, changing the number represented by said tally field either to zero when the tally field represents the number of times said particular kind of event has occurred or to a preloaded zero or positive

value when the said tally field represents the number of resources awaiting processes; and





in response to said first signal, ceasing execution of said method.

4,316,246
BATTERY SWITCHING APPARATUS INCLUDED WITHIN A TIMER ADAPTER UNIT

Henry F. Hartley, Lowell, and Ralph G. Schuberth, Bedford, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Sep. 6, 1979, Ser. No. 73,057
Int. Cl.[3] G06F *1/00*
U.S. Cl. 364—200 **23 Claims**

1. A system including a controller subsystem having a number of circuits of an adapter mounted on a circuit board connectable to said controller subsystem, said adapter circuits comprising:

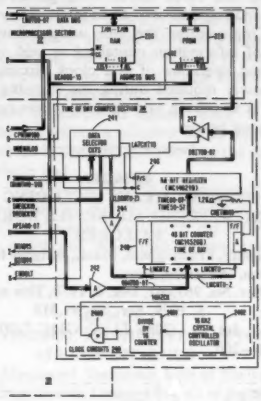
a low power free running time of day counter circuit means for generating and storing time of day values;

rechargeable battery circuit means connected to provide an auxiliary supply voltage, said battery circuit means having first and second output terminals, said first terminal being connected to supply said auxiliary supply voltage and said second terminal being connectable to a ground reference potential;

connector means having a number of pins for interconnecting said controller subsystem and adapter for operation, a first pin being connected to said second terminal and a second pin being connectable to a supply voltage from said controller subsystem;

circuit means connecting said second pin in common with said first terminal for powering said adapter circuits during normal operations; and,

conductor means connecting said first terminal to said time

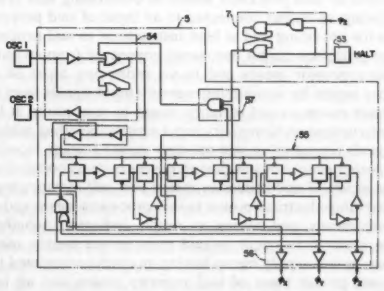


of day counter circuit means, said battery circuits being enabled to power said time of day counter circuit means only upon connecting said adapter circuits into said controller subsystem and said battery circuits being disabled when said adapter circuits are removed from said subsystem thereby extending the shelf life of said battery circuit means.

4,316,247
LOW POWER CONSUMPTION DATA PROCESSING SYSTEM

Eisaburo Iwamoto, Tokyo, Japan, assignor to Texas Instruments, Inc., Dallas, Tex.

Filed Oct. 30, 1979, Ser. No. 89,708
Int. Cl.[3] G06F *1/00*; H03K *21/30*
U.S. Cl. 364—200 **6 Claims**



4. An electronic data processing device all structured using complementary field-effect transistors implemented on a single semiconductor substrate and all receiving external power during normal operation comprising:

a read-only memory for the storage of instructions;

a random-access memory for the storage of data;

a control circuit which provides control signals in response to said instructions;

an arithmetic circuit which performs operations on said data in response to said control signals;

a clock circuit for simultaneously and repetitively generating a plurality of clock phases during a cycle, means for coupling said clock phases to said read-only memory circuit, said random-access memory circuit, said arithmetic circuit and said control circuit;

a halt input terminal circuit coupled to said clock circuit for stopping said clock circuit from generating said clock phases and responsive to a halt input and one of said clock phases representing the time which allows the maintenance of information contained in said system without continued operation of said clock circuit, whereby the only power required during the stopping of said clock circuit is to refresh said random-access memory thereby conserving power.

4,316,248

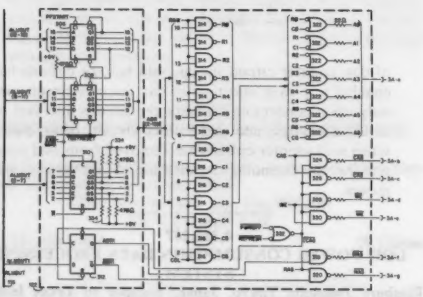
MEMORY REFRESH MEANS INCLUDING MEANS FOR PROVIDING REFRESH ADDRESSES DURING POWER FAILURES

Charles T. Retter, Framingham, Mass., assignor to Data General Corporation, Westboro, Mass.

Division of Ser. No. 967,041, Dec. 6, 1978. This application Nov. 5, 1979, Ser. No. 91,318

Int. Cl.³ G06F *13/00*; G11C *7/00*

U.S. Cl. 364—200 **2 Claims**



1. A digital computer system comprising processor means for processing digital data signals; memory means including a plurality of storage locations for storing at least instructions employed by said processor means in controlling said system and having an output connected to an input of said processor means for providing said at least instructions to said processor means; processor output bus means connected from an output of said processor means and to an addressing input of said memory means for conducting memory input signals from said processor means to said memory means in response to at least said instructions, said memory input signals including addressing signals representing said memory means storage locations; main power supply means having power outputs connected to power inputs of said processor means and said memory means for providing electrical power to said processor means and said memory means, and having an output indicating whether a failure is about to occur in said main power supply means; back-up power supply means having an output connected to at least said power input of said memory means and an input connected from said main power supply failure indicating output and responsive to said failure indicating output for providing power to at least said memory means when a failure occurs in said main power supply means; memory refresh means comprising:

means for measuring successive refresh time intervals and providing an output representing said successive refresh time intervals;

means having a first input connected from said failure indicating output and a second input connected from said measuring means output and responsive to operation of said main power supply means and to operation of said measuring means for providing an output indicating each one of a sequence of first certain said time intervals wherein said failure has occurred in said main power supply means;

means having an input connected from said measuring means output and responsive to operation of said measuring means for providing successive said memory input addressing signals representing successive said memory means storage locations, at least one said memory input addressing signals occurring during each of said time intervals; and

memory address means having inputs connected from said measuring means output, said indicating means output and said processor output bus means and an output connected to said memory means addressing input and responsive to operation of said measuring means and said indicating means during each one of said time intervals other than said first certain said time intervals for

(a) receiving and storing representations of said each one of said memory input addressing signals, and

(b) providing said stored representations of said memory input addressing signals to said memory means for refreshing corresponding said memory means storage locations, and

responsive to operation of said measuring means and said indicating means during said sequence of said first certain said time intervals for

(a) receiving and storing a representation of said memory input addressing signals occurring during the first said first certain said time interval of said sequence,

(b) successively incrementing said stored representation of said memory input addressing signals during each said first certain said time interval following said first said certain time interval of said sequence, and

(c) providing said stored and incremented representation of said memory input addressing signals to said memory means for refreshing said corresponding said storage locations;

whereby said memory input addressing signals are provided to said memory means from said processor means and through said memory address means to refresh said storage locations during each of said time intervals other than said first certain time intervals, and

whereby upon occurrence of said failure of said main power supply means said memory input addressing signals received by said memory addressing means during said first said first certain said time intervals is stored in said memory addressing means and successively incremented by said memory addressing means to provide said memory input addressing signals to said memory means from said memory addressing means to refresh said storage location during occurrence of said failure.

4,316,249

AUTOMATIC HIGH SPEED HOLTER SCANNING SYSTEM

Stuart L. Gallant, Pikesville; Paul R. Caron, Columbia, both of Md.; Stanley M. Dunn, West Lafayette, Ind.; Walter E. Palmer, Baltimore, Md.; Ernest G. Schmitt, Ellicott City, Md., and Michael Taddeo, Columbia, Md., assignors to Hittman Corporation, Columbia, Md.

Continuation-in-part of Ser. No. 79,988, Sep. 28, 1979. This application Nov. 9, 1979, Ser. No. 92,925

Int. Cl.³ G06F *15/42*

U.S. Cl. 364—417 **14 Claims**

1. An adaptive cardiac diagnostic system for receiving electrocardiogram signals which have been prerecorded in dissimilar formats having different known parameters and for processing same in accordance with operator input, comprising:

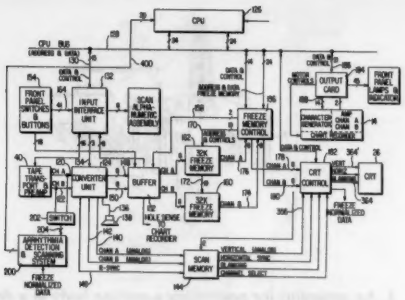
selector means responsive to said operator input for selecting

one of said prerecorded electrocardiogram signals of dissimilar format;

playback means for reproducing said selected one of said prerecorded electrocardiogram signals to develop reproduced signals;

scanning and converting means for scanning and converting the reproduced signals to produce information signals;

analyzing means for analyzing said information signals; and



processor means for controlling said scanning and converting means and said analyzing means, said processor means being responsive to said operator input for variably controlling said scanning and converting means and said analyzing means in accordance with each dissimilar format based upon the different parameters of said format for said selected one of said prerecorded electrocardiogram signals.

4,316,250

DIP DETERMINATION BY STATISTICAL COMBINATION OF DISPLACEMENTS

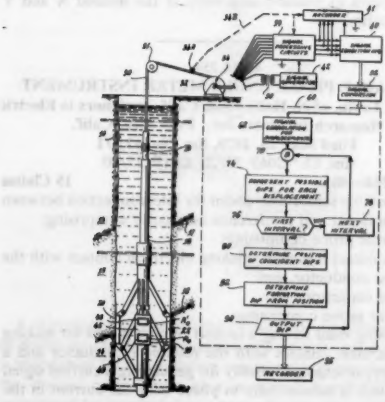
Philippe Vincent, Chilly Mazarin, France, assignor to Schlumberger Technology Corporation, New York, N.Y.

Continuation of Ser. No. 544,421, Jan. 27, 1975, abandoned. This application Nov. 15, 1979, Ser. No. 94,596

Claims priority, application France, Jan. 30, 1974, 74 03003

Int. Cl.[3] G06F *15/20*; E21B *47/00*

U.S. Cl. 364—422 **26 Claims**



1. In the art of well logging, a process for converting well logging signals which comprise records of the amplitude of subsurface characteristics versus depth in a borehole into a map of the dips of one or more subsurface earth formation features comprising the machine-implemented steps of:

a. utilizing well logging signals derived from respective passes of investigating devices along the wall of a borehole through a subsurface formation to produce signals determined by the likely displacements between the respective reflections of respective subsurface features on said well logging signals in at least two different depth spans in the borehole;

b. producing a map record which conforms to a plane transverse to the borehole axis and contains a number of map line representations the position of each of which on the map record conforms to a range of dips consistent with a respect one of said displacement signals;

c. wherein said displacement signals relate to respective borehole depths within a selected depth interval of the borehole which is small as compared to the depth of the entire borehole; and

d. wherein a predominant locus of intersections of such line representations on the map record determines a likely dip of a subsurface feature which is in the borehole depth interval to which said depth displacement signals correspond.

4,316,251

ELECTRIC CONTROL METHOD FOR AUTOMOBILE AIR CONDITIONER

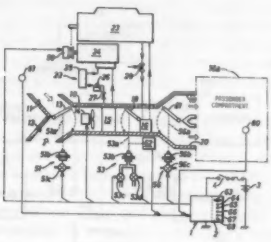
Atsunori Saito; Masanaori Naganoma, both of Kariya; Yasuhiro Iwata, Aichi, and Kiyoshi Usami, Obu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 79,260, Sep. 27, 1979, abandoned. This application Oct. 23, 1980, Ser. No. 199,920

Claims priority, application Japan, Oct. 2, 1978, 53-121855

Int. Cl.[3] G06F *15/20*; B60H *3/00*

U.S. Cl. 364—424 **9 Claims**



1. An electric control method for an automobile air conditioner including an air duct for allowing the flow of air into a passenger compartment of the automobile, an evaporator arranged within said air duct and connected with a refigerant compressor for cooling the air flowing therethrough, a heater arranged within said air duct for warming a portion of the cooled air flowing through said evaporator into said compartment, an air-blend door arranged between said evaporator and said heater for controlling an amount of the cooled air flowing through said heater and controlling an amount of the cooled air directly flowing into said compartment, and control means for controlling the opening degree of said air-blend door to direct the actual in-car temperature toward a desired temperature, said method comprising the steps of:

producing a first electric binary signal indicative of the actual in-car temperature;

producing a second electric binary signal indicative of the actual temperature outside the automobile;

calculating a value indicative of an estimated temperature required to direct the actual in-car temperature toward the desired temperature by a digital computer programmed to calculate said value from a function describing a desired relationship between the estimated tempera-

ture and an in-car temperature in consideration with a temperature outside the automobile, the calculation being performed by using the first and second binary signals;

calculating a deviation between the desired temperature and the estimated temperature by said digital computer programmed to calculate the deviation on the basis of the previous calculated value;

producing an output signal from said digital computer when the deviation is out of a first predetermined range and ceasing the output signal when the deviation is in the first predetermined range, the output signal being applied to said control means to direct the actual in-car temperature toward the desired temperature;

discriminating by said digital computer whether or not a difference between the desired temperature and the actual in-car temperature is in a second predetermined range when the rate of change of the actual in-car temperature is below a predetermined value, said digital computer being programmed to perform the discrimination by using the first binary signal;

compensating the estimated temperature to direct the temperature difference into said second predetermined range; and

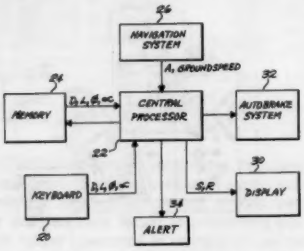
continuously repeating the above sequence of steps for controlling the actual in-car temperature in response to any changes in said electric binary signals.

4,316,252

APPARATUS FOR DETERMINING THE POSITION OF AN AIRCRAFT WITH RESPECT TO THE RUNWAY

Michael G. Cooper, Renton, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Aug. 10, 1979, Ser. No. 65,404
Int. Cl.³ G05D *1/06;* **G06F** *15/50*
U.S. Cl. 364—428 **8 Claims**



1. Apparatus for determining the position of an airplane, having a groundspeed indicator, with respect to a runway comprising:

means for determining the glidescope angle ϕ of the plane with respect to the runway;

means for determining that the plane is a specified altitude A above the runway on said glideslope; processing means including means for:

calculating the ground distance d of the airplane from the intersection of the glideslope with the runway from the equation $d=A/\tan\phi$;

calculating the ground distance S_o of the airplane from the beginning of the runway during the instance of the airplane being at the altitude A from the equation $S_o=-d-D$, where D is the predetermined distance from the beginning of the runway to the intersection of the glideslope with the runway;

integrating airplane ground speed to produce an indication of airplane relative position; and

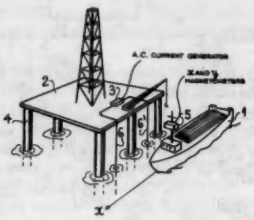
updating said distance S_o by said relative position to produce a continuous indication S of the distance of the airplane from the beginning of the runway.

4,316,253

APPARATUS FOR POSITIONING A BODY BY MEANS OF A MAGNETIC FIELD

Gilles Possémé, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Nov. 14, 1979, Ser. No. 94,187
Claims priority, application France, Nov. 17, 1978, 78 32537
Int. Cl.³ G06G *7/70;* **B63H** *25/00*
U.S. Cl. 364—432 **8 Claims**



1. An apparatus for positioning a moving body at a desired X and Y location in a plane referenced by axis OX and OY comprising:

fixed magnetic field producing means including an electrical generator for producing an alternating current at frequency f in at least one conductor wire rectilinear and perpendicular to the plane OXY, the current flow in said wire producing a magnetic field with components H_X and H_Y along axes X and Y; and wherein on said moving body are mounted:

at least one pair of magnetometers for measuring the amplitude of the components of said magnetic field on mobile axis O'x and O'y;

orientation measuring means for producing a signal indicating the angle of orientation θ of said moving body;

motors for displacing said moving body;

a memory for storing values indicating the desired X and Y location;

signal processing means including means for receiving the values of θ, H_X and H_Y from said orientation measuring means, and from said magnetometers and calculating values indicating the current X and Y location and comparison means for comparing the calculated and stored values and producing a signal for operating said motors to position said body at the desired X and Y location.

4,316,254

PORTABLE PHASE ANGLE METER INSTRUMENT

Harry P. Levin, of N. Hollywood, Calif., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed May 25, 1979, Ser. No. 42,671
Int. Cl.³ G06F *15/20;* **G01R** *25/00*
U.S. Cl. 364—481 **15 Claims**

1. A portable sensor instrument for interconnection between a first conductor and a reference conductor comprising:

a potential probe comprising:

first contact means for making electrical contact with the first conductor, and

a first capacitor;

a current probe comprising:

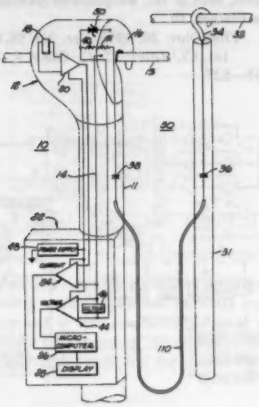
a sensing head having a second contact means for making electrical contact with the reference conductor and a current sensing assembly for generating a current signal which is substantially in phase with the current in the reference conductor, and

a second capacitor;

a cable for interconnecting the first capacitor and the second capacitor;

an impedance means, the first contact means, the first and second capacitors, the impedance means and the second contact means interconnected in series for generating a voltage signal across the impedance means which is substantially in phase with the voltage between the first conductor and the reference conductor; and

processing means coupled for receiving the current signal and the voltage signal, comprising:



means for digitizing the current signal and the voltage signal,

means for combining the digitized current signal and the digitized voltage signal and generating therefrom a measure of the phase difference

between the current signal and the voltage signal, and

means for displaying the measure of the phase difference.

4,316,255

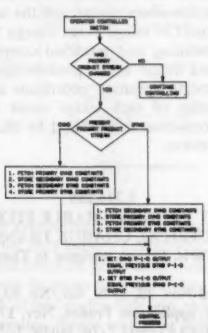
FRACTIONAL DISTILLATION PROCESS CONTROL

Bruce A. Jensen, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 8, 1980, Ser. No. 184,845

Int. Cl.³ B01D *3/42*

U.S. Cl. 364—501 **10 Claims**



1. Apparatus for controlling a fractional distillation process in which the desired composition of a primary product stream is maintained by manipulating a primary process variable and the desired composition of a secondary product stream is maintained by manipulating a secondary process variable, the fractional distillation apparatus and control apparatus comprising:

a fractional distillation column means;

means for supplying heat to said fractional distillation column means;

means for withdrawing a first product stream from said fractional distillation column means;

means for withdrawing a second product stream from said fractional distillation column means;

means for establishing a first signal representative of the concentration of at least one component in said first product stream;

means for establishing a second signal representative of the desired concentration of said at least one component in said first product stream;

a first controller means for comparing said first signal and said second signal and for establishing a third signal responsive to the difference between said first signal and said second signal;

means for establishing a fourth signal representative of the concentration of at least one component in said second product stream;

means for establishing a fifth signal representative of the desired concentration of said at least one component in said second product stream;

a second controller means for comparing said fourth signal and said fifth signal and for establishing a sixth signal responsive to the difference between said fourth signal and said fifth signal;

means for establishing primary first tuning constants for said first controller means for use when said first controller means is controlling said primary process variable, for establishing secondary first tuning constants for said first controller means for use when said first controller means is controlling said secondary process variable, for establishing primary second tuning constants for said second controller means for use when said second controller means is controlling said primary process variable and for establishing secondary second tuning constants for said second controller means for use when said second controller means is controlling said secondary process variable;

memory means for storing said primary first tuning constants, said secondary first tuning constants, said primary second tuning constants and said secondary second tuning constants;

means for manipulating said primary process variable in response to said third signal when said first product stream is designated as the primary product stream, said primary first tuning constants being supplied to said first controller and said secondary first tuning constants being retained in said memory means when said primary process variable is being manipulated in response to said third signal;

means for manipulating said secondary process variable in response to said sixth signal when said first product stream is designated as the primary product stream, said secondary second tuning constants being supplied to said second controller means and said primary second tuning constants being retained in said memory means when said secondary process variable is being manipulated in response to said sixth signal;

means for manipulating said primary process variable in response to said sixth signal when said second product stream is designated as the primary product stream, said primary second tuning constants being supplied to said second controller means and said secondary second tuning constants being retained in said memory means when said primary process variable is being manipulated in response to said sixth signal; and

means for manipulating said secondary process variable in response to said third signal when said second product stream is designated as the primary product stream, said secondary first tuning constants being supplied to said first controller means and said primary first tuning constants being retained in said memory means when said secondary process variable is being manipulated in response to said third signal,

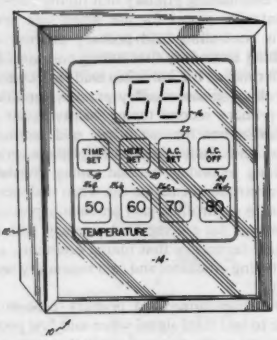
wherein the switching of said primary first tuning constants

with said secondary first tuning constants and the switching of said primary second tuning constants with said secondary second tuning constants is accomplished automatically when the designation of the primary product stream changes, wherein the manipulation of said primary process variable in response to said third signal changes automatically to manipulation in response to said sixth signal when the designation of the primary product stream changes from said first product stream to said second product stream and wherein the manipulation of said secondary process variable in response to said sixth signal changes automatically to manipulation in response to said third signal when the designation of the primary product stream changes from said first product stream to said second product stream.

4,316,256
THERMOSTAT WITH AUTOMATIC HEAT/AIR CONDITIONING CHANGEOVER

Donald B. Hendricks, Bloomington, and Robert M. Knight, Greenwood, both of Minn., assignors to MicroComm Corporation, Minneapolis, Minn.

Filed Dec. 31, 1979, Ser. No. 108,340
Int. Cl.³ F23N *5/20*; H05B *1/02*
U.S. Cl. 364—505 **21 Claims**



1. Temperature control apparatus for providing heating control signals for controlling heating apparatus and cooling control signals for controlling cooling apparatus, the temperature control apparatus comprising:

temperature sensing means for providing a temperature signal indicative of a sensed temperature;

time-of-day means for providing a time-of-day value;

means for storing heating control information including heating time values and associated heating control temperature values;

means for storing cooling control information; and

control means for providing the heating control and cooling control signals, wherein the control means periodically makes a heating control determination, based upon the time-of-day value, the temperature signal, and the stored heating control information, to provide a heating control signal which

(a) turns the heating apparatus on,

(b) turns the heating apparatus off,

(c) leaves the heating apparatus on, or

(d) leaves the heating apparatus off; and wherein only if the heating control determination leaves the heating apparatus off, the control means makes a cooling control determination based upon the time-of-day value, the temperature signal, and the cooling control information, to provide a cooling control signal which

(e) turns the cooling apparatus on,

(f) turns the cooling apparatus off,

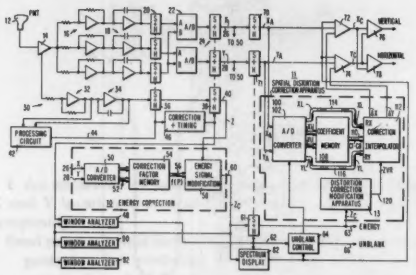
(g) leaves the cooling apparatus on, or

(h) leaves the cooling apparatus off.

4,316,257
DYNAMIC MODIFICATION OF SPATIAL DISTORTION CORRECTION CAPABILITIES OF SCINTILLATION CAMERA

Anthony P. Del Medico, Niles, and Roger E. Arseneau, Arlington Heights, both of Ill., assignors to Siemens Gammasonics, Inc., Des Plaines, Ill.

Filed Nov. 20, 1979, Ser. No. 96,182
Int. Cl.³ G06F *15/42*; G06K *9/00*
U.S. Cl. 364—527 **9 Claims**



1. Spatial distortion correction modification apparatus for a scintillation camera, the scintillation camera providing position coordinate data defining the position of each image event that occurs and an energy signal representing the energy level corresponding to each image event, the spatial distortion correction modification apparatus comprising:

spatial distortion correction means comprising correction factor means having stored therein an addressable array of correction factors, said spatial distortion correction means being responsive to the coordinate position of each image event to generate position coordinate correction data representing the spatial distortion correction factor corresponding to each image event;

modification means responsive to the energy signal of each image event and to said generated position coordinate correction data for providing modified position coordinate correction data in accordance with the variation in spatial distortion characteristics of the scintiallation camera with respect to image event energy level; and

means for combining said modified coordinate correction data and said image event position coordinate data to provide corrected position coordinate data representing the coordinates of each image event including spatial distortion correction as modified by the energy level of each image event.

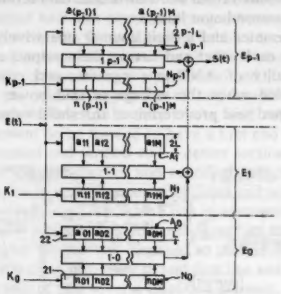
4,316,258
DIGITALLY PROGRAMMABLE FILTER USING ELECTRICAL CHARGE TRANSFER

Jean L. Berger, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Nov. 13, 1979, Ser. No. 93,817
Claims priority, application France, Nov. 17, 1978, 78 32538
Int. Cl.³ G06G *7/16*; H03K *5/159*
U.S. Cl. 364—602 **15 Claims**

1. A digitally programmable electrical charge transfer filter receiving an analog signal to be filtered and M filtering coefficients, each coefficient being digitally expressed on P bits, said filter comprising p separate stages, each of said stages comprising a first charge transfer shift register, called signal register, which comprises at least M transfer stages called cells, and which receives said analog signal; a second charge transfer

shift register, called coefficient register, which comprises M transfer stages, called cells, which receives the M bits of the same weight of said M coefficients; and M memory elements, respectively connected to the output of said M cells of said coefficient register, thereby statically storing said M bits; said



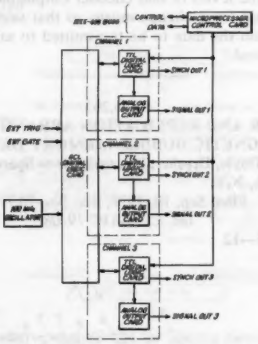
filter further comprising multiplication and summation means for the digital-analog multiplication of the data contained in said signal register and in said coefficient register relative to each stage and for the summation of the results of the multiplications in each stage, thus supplying the output signal of said filter.

4,316,259

PROGRAMMABLE FUNCTION GENERATOR

Charles D. Albrecht, Commack, and Edward J. McCormick, Hauppauge, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Mar. 18, 1980, Ser. No. 131,821
Int. Cl.[3] G06F *15/34*
U.S. Cl. 364—718 **23 Claims**



1. Apparatus for generating an analog function in conjunction with an external data pattern comprising:

(a) programmable function generating means responsive to said data pattern for generating a plurality of digital words representative of said analog function, said programmable function generating means including digital logic means activated by a clocking means;

(b) control means for selectively transferring said data pattern to said programmable function generating means, said control means including microprocessor means adapted to receive said data pattern via an interface means; and

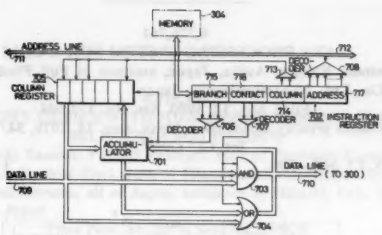
(c) synthesizing means responsive to said programmable function generating means for converting said plurality of digital words to said analog function.

4,316,260

SEQUENCE DISPLAY CONTROLLING METHOD AND CONTROLLER

Keiji Hideshima, Fujisawa; Haruo Koyanagi, Ome; Hiroharu Suda, Yokohama; Hirokazu Sawano, Hitachi; Masaoki Takaki, Hitachi; Kunio Yamanaka, Hitachi; Isao Yasuda, Hitachi, and Kazuyoshi Asada, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Nissan Motor Co., Ltd., both of Tokyo, Japan

Filed Sep. 13, 1979, Ser. No. 75,221
Claims priority, application Japan, Sep. 13, 1978, 53-111661
Int. Cl.[3] G06F *3/153, 9/06*
U.S. Cl. 364—900 **5 Claims**



1. A sequence program display control method for a stored-program sequence controller including memory means storing a plurality of predetermined sequence instructions for controlling a controlled-objective process in conjunction with a predetermined sequence ladder diagram including a plurality of relay contacts, said instructions including on-off commands for said relay contacts; input means for receiving condition signals indicative of the present state of various relay contacts of said sequence ladder diagram; operation control means for reading out sequence instructions stored in said memory means and for generating output control signals for said controlled-objective process in response to said sequence instructions and the condition signals provided by said input means; output means for outputting said output signal from said operation control means to said controlled-objective process; and cathode ray tube display means connected to said operation control means for displaying the conditions of operation of said sequence program, said method comprising the steps of:

(a) storing instructions relating to a predetermined sequence ladder diagram in said memory means, said instructions for said ladder diagram being stored in an order corresponding to an array formed of a plurality of imaginary rows and a plurality of imaginary columns;

(b) reading out the contents of said memory means relative to the first row of the diagram in a sequence successively from the first column to the last column, and repeating a similar reading operation relative to the second row to the last row successively;

(c) inputting instructions read out in said reading step including branch information, on-off commands in the form of contact-state information and address information bits into respective bit positions of an instruction register;

(d) decoding said inputted branch information, and inputting a control signal into a first register when said branch information indicates a branch or join to a subsequent row and inputting the same control signal into a second register when said information indicates a branch or join from the previous row, and inputting a display signal corresponding to a branch information bit pattern into an accumulator;

(e) storing, when a branch to the subsequent row is present in the decoded branch information, the value of said accumulator in a bit position of a first-in, first-out column register corresponding to the stored bit position of said

first register and thereafter shifting the content of said first register by one bit;

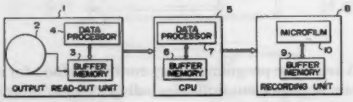
(f) inputting to the accumulator, when a branch or a contact from the previous row is present in the decoded branch information, the bit content of the column register corresponding to the stored bit position of said second register and thereafter shifting the content of said second register by one bit, and

(g) performing a logical operation on the condition signal inputted to said input means, a signal from said accumulator and a signal obtained by decoding of said contact-state information in said instruction so as to produce a display information signal to be applied to said CRT display means.

4,316,261
DATA PROCESSING SYSTEM FOR A COM

Tsutomu Kimura, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Aug. 13, 1980, Ser. No. 177,604
Claims priority, application Japan, Aug. 14, 1979, 54/103393
Int. Cl.³ G06F *3/06*
U.S. Cl. 364—900 **3 Claims**



1. A system for processing output data from a computer in a computer output microfilmer, said system comprising a computer output read-out unit having a data processor and a buffer memory for storing the output data from the computer, a central processor unit having a buffer memory, and a recording unit having a buffer memory,

said buffer memory of said computer output read-out unit being controlled by said data processor of said computer output read-out unit for reading out the stored output data from the computer,

wherein the output data from the computer is divided into pages, and wherein the respective buffer memories of said computer output read-out unit, said central processor unit, and said recording unit store data of corresponding respective pages of the output data, and

wherein the recording unit records the data on one page (N), while the central processor unit processes the data of a next page (N+1), and while the buffer memory of the computer output read-out unit stores the data of a subsequent page (N+2).

4,316,262
REMOTE METER READING SYSTEM

Toshiaki Mizuta, Kawasaki; Takeshi Abe, Yokohama; Ichiro Yoshihara, Funabashi; Kazuhito Saito, Kawasaki, and Keishin Tsuchiya, Higashi-Yamato, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed May 30, 1979, Ser. No. 43,639
Claims priority, application Japan, Jun. 8, 1978, 53-69177
Int. Cl.³ G06F *3/04*; H03B *3/00*
U.S. Cl. 364—900 **5 Claims**

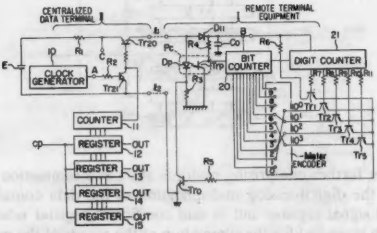
1. In a data collection system having a central data terminal and a plurality of remote terminal units connected to said data terminal through transmission lines so that data in selected ones of said remote terminal units may be read out at said central data terminal by pulses transmitted from said central data terminal to said selected remote terminal units through said transmission lines, the improvement wherein:

said central data terminal comprises clock pulse generator means for providing a train of pulses to be transmitted to said selected remote terminal units through said transmission lines, and means for detecting changes in the amplitude of said pulses which cause the read out of said data; and

each of said remote terminal units comprises:

a chargeable power supply which reaches a voltage over a predetermined threshold value by storing said pulses transmitted from said centralized data terminal through said transmission lines a

a bit counter and a digit counter operatively connected with each other and having their outputs coupled to a plurality of AND-gate circuits, said counters being enabled when the voltage of said power supply has reached said predetermined threshold value,



an encoder means coupled to the outputs of said bit counter and said digit counter through said AND-gate circuits for storing data to be read out, and

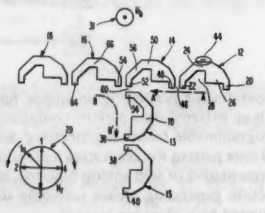
means to change the level of said pulses when any one of said AND-gate circuits has an output of a given value,

whereby, said bit counter counts said pulses from said centralized data terminal and provides corresponding outputs to said encoder means, said encoder means generating output pulses when the inputs to said encoder means from said bit counter coincide with a desired value of each digit of said data to be read out, and the levels of said encoder output pulses are varied by said level change means so that said output pulses contain the data to be transmitted to said central data terminal.

4,316,263
TRANSFER AND REPLICATION ARRANGEMENT FOR MAGNETIC BUBBLE MEMORY DEVICES

William D. Doyle, Dresher, Pa., assignor to Sperry Corporation, New York, N.Y.

Filed Sep. 10, 1979, Ser. No. 73,772
Int. Cl.³ G11C *19/08*
U.S. Cl. 365—12 **13 Claims**



3. A bubble memory arrangement of the type wherein magnetic bubbles within a planar layer of material are moved in response to magnetic forces thereon, including an in-plane rotating magnetic field, said arrangement comprising:

(a) first and second tracks comprising half disk permalloy elements, said first track comprising advance and reverse

elements, each formed to have first and second end sections and a center section integrally connected therebetween, said first and second end sections lying along a first line which line is substantially straight and with said center sections lying on a first side of said first line, said first end section of said reverse element lying in close proximity to said second end section of said advance element;

(b) a modified half-disk element arranged between said first and second tracks for replicating bubbles located in said first track in response to rotation of said in-plane magnetic field, said rotation being in a predetermined direction with respect to said arrangement of said modified element between said first and second tracks, said modified half-disk element being formed to have a first end section and an elongated end section and a center section connected integrally therebetween, said modified half-disk element disposed to have its first and elongated end sections lying along a replicating line which line is substantially straight and which lies substantially orthogonal to said first line and further formed and disposed so that its first end section lies in close proximity to said first line and to said first end section of said reverse direction element, and so that its center section lies on a first side of said replicated line in a direction toward said second end section of said reverse direction permalloy element; and

(c) transfer electrical conductor means for transferring bubbles from said first and second tracks to said modified element in response to said timed current signals to said conducting means and rotation of said in-plane field, said transfer electrical conductor means being formed and disposed to lie interlinkably between said layer of material and a portion of said second track to a portion of said modified half-disk element.

4,316,264

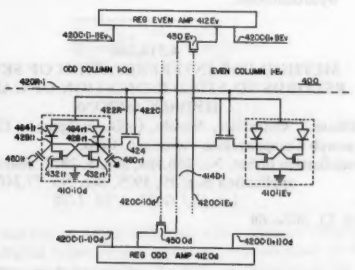
UNIQUELY ACCESSED RAM

Eliyahou Harari, 2320 Friars La., Los Altos, Calif. 94022

Filed Jan. 8, 1980, Ser. No. 110,405

Int. Cl.³ G11C *7/00, 8/00*

U.S. Cl. 365—190 **20 Claims**



18. A regenerative static RAM for writing data-in and reading data-out, comprising:

a plurality of memory cells arranged in a row by column matrix;

access means for addressing a single cell of the matrix;

a single data lead means for the conduction of data-in and data-out, said single data lead means extending to each cell of the matrix;

write means for providing data-in to the addressed cell through said single data lead means;

regenerative read means for receiving data-out from the addressed cell through said single data lead means;

at least one capacitance discharge maintained bistable storage means within each of the plurality of the memory cells for storing the data-in;

a single input-output node between each bistable storage means and said single data lead means through which the data-in and data-out pass;

a row access switch and a column access switch for each memory cell connected in series between the input-output node and the data lead means, and responsive to the access means for controlling the passage of data-in and data-out; and

refresh means for periodically recharging the bistable storage means.

4,316,265

MEMORY DEVICE WITH HIGH SPEED MEMORY CELL SELECTION MECHANISM

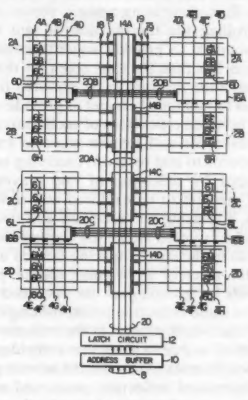
Hirotoshi Tanaka; Yoshiki Kawajiri, both of Hachioji; Kouetsu Chiba; Ryoichi Hori, both of Hinodemachi, and Kiyoo Itoh, Higashikurume, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 16, 1979, Ser. No. 94,927

Claims priority, application Japan, Nov. 20, 1978, 53/158800[U]

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—203 **27 Claims**

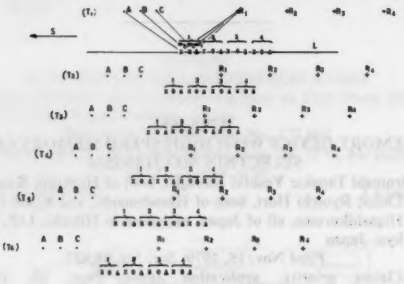


1. A memory device including a plurality of column lines, a plurality of row lines intersecting said column lines, a plurality of memory cells provided respectively at the intersections of said column lines and said row lines, row decoding means responsive to a first address signal for selecting at least one of said row lines, column decoding means responsive to a second address signal for selecting at least one of said column lines, address signal generator means for generating said first address signal and thereafter said second address signal, and common signal line means for supplying the output of said address signal generator means to said column decoder means and said row decoder means, wherein said row decoding means include switching means for connecting said common signal line means to said row decoding means to allow the application of said first address signal to said row decoding means and to inhibit the application of said second address signal to said row decoding means, and said column decoding means includes means for disabling said column decoding means during a period when said first address signal is applied to said column decoding means through said common signal line means.

4,316,266
METHOD OF REFLECTION POINT CORRELATION SEISMIC SURVEYING

Maurice G. Y. Barbier, Pau, and Philippe J. Staron, Mennecy, both of France, assignors to Societe Nationale Elf Aquitaine (Production), Courbevoie, France

Continuation of Ser. No. 780,846, Mar. 24, 1977, abandoned. This application Feb. 1, 1979, Ser. No. 8,578
Claims priority, application France, Mar. 30, 1976, 76 09118
Int. Cl.³ G01V *1/20, 1/28, 1/38*
U.S. Cl. 367—21 **4 Claims**



1. A seismic exploration method with high spatial resolution comprising, locating a line of receivers in longitudinally spaced relation, locating a line of transmission sources in spaced relation to each other, generating seismic waves at each of said sources, controlling the transmission of said waves by said transmission sources, to provide wave transmission intervals between sources less than the time taken for the longest wave to travel through the medium to be explored from said transmission sources to said receivers and to provide wave transmission intervals between repetitions of each source at least equal to said time taken for said longest wave to travel from said transmission source to said receiver, receiving on the receivers signals produced by reflection of said waves at reflection points in said medium to be explored and recording said received signals, displacing said receivers and sources along the seismic line to be explored after each transmission of waves by a distance equal to the source spacing in such a manner that a source takes the place of a preceding source, processing said recorded signals by grouping all the recorded signals corresponding to the same reflection point, shifting in time each of said recorded traces with respect to the transmission instants of the corresponding source to place into coincidence the respective transmission instants of sources the seismic paths of which reach a predetermined reflection point, and adding all said shifted in time recorded traces relating to the same reflection point.

4,316,267
METHOD FOR INTERPRETING EVENTS OF SEISMIC RECORDS TO YIELD INDICATIONS OF GASEOUS HYDROCARBONS

William J. Ostrander, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

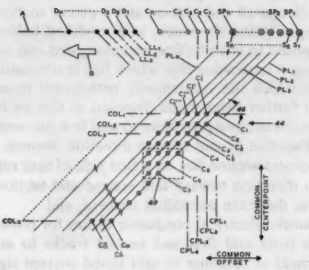
Continuation-in-part of Ser. No. 756,584, Jan. 3, 1977, abandoned. This application Dec. 20, 1978, Ser. No. 971,628
Int. Cl.³ G01V *1/34, 1/36*
U.S. Cl. 367—68 **7 Claims**

1. An on-site field method for increasing resolution of seismic records containing high-intensity amplitude events in order to associate such events with gas-bearing strata in the earth, comprising the steps of:

(a) generating seismic field data, including a record of signals from acoustic discontinuities associated with said strata of interest by positioning and employing an array of sources and detectors such that centerpoints between selected pairs of sources and detectors form a series of centerpoints along a line of survey, said recorded signals being the output of said detectors;

(b) by means of automated on-site processing means, statically and dynamically correcting said recorded signals to form corrected traces whereby each of said corrected traces are associated with a centerpoint horizontally midway between a source-detector pair from which said each corrected trace was originally derived;

(c) by means of automated on-site processing means, formatting said corrected traces in two dimensions whereby each of said corrected traces is identified in its relationship to



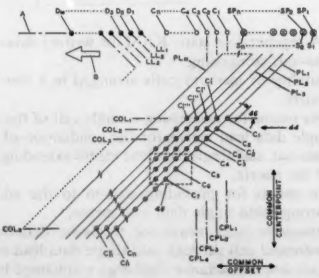
neighboring traces on the basis of progressive changes in horizontal offset value versus progressive changes in common centerpoint location, and

(d) displaying a series of said traces of step (c) on a side-by-side basis as a function of progressively changing horizontal offset values, said displayed traces all being associated with at least the same general common group of centerpoints whereby progressive change in a high-intensity amplitude event from trace to trace of said displayed traces as a function of progressive change in horizontal offset value can be identified on-site, said progressive change being associable with strata containing gaseous hydrocarbons.

4,316,268
METHOD FOR INTERPRETATION OF SEISMIC RECORDS TO YIELD INDICATION OF GASEOUS HYDROCARBONS

William J. Ostrander, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 756,584, Jan. 3, 1977, abandoned. This application Sep. 19, 1979, Ser. No. 77,240
Int. Cl.³ G01V *1/34, 1/36*
U.S. Cl. 367—68 **12 Claims**



1. A method for increasing resolution of seismic records containing high-intensity amplitude events in order to associate

such events with gas-bearing strata in the earth, comprising the steps of:

(a) generating seismic data, including a record of signals from acoustic discontinuities associated with said strata of interest by positioning and employing an array of sources and detectors such that centerpoints between selected pairs of sources and detectors form a series of centerpoints along a line of survey, said recorded signals being the output of said detectors;

(b) by means of automated processing means, statically and dynamically correcting said recorded signals to form corrected traces whereby each of said corrected traces is associated with a centerpoint horizontally midway between a source-detector pair from which said each corrected trace was originally derived;

(c) by means of automated processing means, indexing said corrected traces in two dimensions whereby each of said corrected traces is identified in its relationship to neighboring traces on the basis of progressive changes in horizontal offset value versus progressive changes in common centerpoint location,

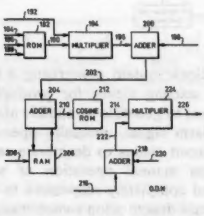
(d) displaying a series of said traces of step (c) on a side-by-side basis as a function of progressively changing horizontal offset values, said displayed traces all being associated with at least the same general common group of centerpoints so that progressive change in a high-intensity amplitude event from trace to trace of said displayed traces is identified as a function of progressive change in horizontal offset value whereby more likely than not said event relates to reflections from acoustic impedances with strata containing gaseous hydrocarbons.

4,316,269

OWN DOPPLER NULLIFIER FOR SONAR SYSTEM

Adrian van't Hullenaar, deceased, late of Smithville, Canada (by A. van't Hullenaar, executrix), assignor to Westinghouse Canada Limited, Hamilton, Canada

Division of Ser. No. 70,686, Aug. 29, 1979, Pat. No. 4,274,148. This application Oct. 14, 1980, Ser. No. 196,306
Claims priority, application Canada, Sep. 8, 1978, 310882
Int. Cl.³ G01S *15/58*
U.S. Cl. 367—90 **6 Claims**



1. A method of extracting own ship's doppler information from a digital beam output signal of a beamformer to obtain target doppler information, the method comprising the steps of:

(A) introducing an offset frequency "A" to the digital beam output signal which is a function of the beamformer sampling frequency;

(B) generating a digital signal representative of the own ship's doppler information and offsetting the digital signal by frequency amount "B" which is a function of the beamformer sampling frequency and offset frequency "A";

(C) multiplying the generated digital signal with the beam output signal to obtain a signal having a difference frequency component and a sum frequency component which both lie in their respective difference frequency band and sum frequency band whereby the difference frequency band has a center frequency offset by amount A−B which eliminates the effect of noise due to fold over from the negative frequency band into the difference frequency band; and

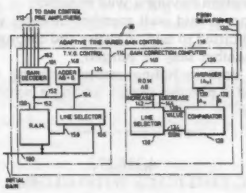
(D) filtering out the sum frequency component to leave the difference frequency component representative of said target doppler information.

4,316,270

DIGITAL TIME-DELAY BEAMFORMER FOR SONAR SYSTEMS

Adrian van't Hullenaar, deceased, late of Smithville, Canada (by Mrs. A. van't Hullenaar, executrix), assignor to Westinghouse Canada Limited, Hamilton, Canada

Division of Ser. No. 70,686, Aug. 29, 1979. This application Oct. 14, 1980, Ser. No. 196,289
Claims priority, application Canada, Sep. 8, 1978, 310882
Int. Cl.³ G01S *15/02*
U.S. Cl. 367—98 **5 Claims**



1. An adaptive time varied gain control apparatus for varying the gain of a plurality of preamplifiers during each consecutive ping-cycle of a sonar receiver to be inversely proportional to momentary average reverberation in the medium of operation, said apparatus comprising:

storage means having a plurality of storage spaces each having a stored gain;

preset means for initially storing in said storage spaces gain step approximations of an inverse standard reverberation curve where said gain step approximations have respective time-durations determined from said curve;

means for storing each of said time-durations and for associating each of said time-durations with the storage space where said time-duration's respective gain step approximation is initially stored;

control means for varying the gain of said preamplifiers to correspond to each stored gain during each ping-cycle whereby each stored gain is applied to said preamplifiers for a duration equal to the time-duration associated with the stored gain's respective storage space;

averaging means for averaging a plurality of beam output signals from a beamformer in the sonar receiver during each time-duration;

means for determining a gain correction as a function of a reference signal and the average of the beam output signals during each time duration;

means for computing a new gain during each time-duration by summing the gain correction with the respective stored gain of that time-duration; and

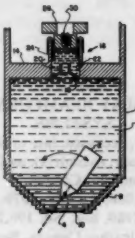
means for storing the new gain in the stored gain's respective storage space during each time-duration.

4,316,271

PURGING AND EXPANSION MECHANISM

Donald A. Evert, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 14, 1981, Ser. No. 224,897
Int. Cl.³ H04R 1/02
U.S. Cl. 367—140 6 Claims



1. A housing structure for an electroacoustic transducer comprising:

a main housing body portion defining a chamber in which the transducer is mounted;

said body portion having a wall member;

an access port in said wall member through which fluid fill may be admitted to said chamber and through which gases in said chamber may be purged;

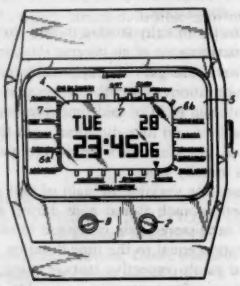
said access port including means defining a bubble trap cavity and a plunger means having a selectively opened bleed hole.

4,316,272

ELECTRONIC TIMEPIECE WITH GLOBAL TIME ZONE DISPLAY

Okito Naito, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation of Ser. No. 830,936, Sep. 6, 1977, Pat. No. 4,180,969. This application Oct. 29, 1979, Ser. No. 88,921
Claims priority, application Japan, Sep. 3, 1976, 51-106137
The portion of the term of this patent subsequent to Jan. 1, 1997, has been disclaimed.
Int. Cl.³ G04B 19/22; G04C 17/00
U.S. Cl. 368—21 14 Claims



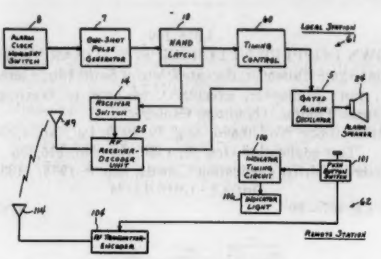
1. An electronic timepiece comprising in combination series-connected counter means, each of said counter means being adapted to produce at least one timekeeping signal representative of the count of said counter means, display drive means for receiving each of said timekeeping signals and producing display driving signals in response thereto, a plurality of numerical display digits for receiving said display drive signals and displaying time information in response to the timekeeping signals produced by said counter means, a plurality of visual indication and display segments coupled to said display drive means for selectively indicating a predetermined time zone corresponding to the time displayed by said numerical display digits, mode select means coupled to at least one of said counter means for selectively disposing said counter means between a local time mode and a global time mode, each of said counter means coupled to said mode select means being adapted to produce timekeeping signals representative of a predetermined local time zone when said mode select means disposes same in a local time zone mode, an indexing means coupled through said mode select means to the same counter means as the mode select means, said indexing means being adapted to index the predetermined counts of said counters representative of local time and thereby index the count of said timekeeping signal produced thereby to a count representative of a different global time zone when said mode select means is disposed in a global time mode, said indexing means including storage means for storing a predetermined count representative of a local time therein, said indexing means being adapted to return the count of each of said counter means coupled thereto to a count representative of a local time zone in response to said mode select means returning said timepiece from a global time display mode to a local time display mode.

4,316,273

REMOTE-CONTROLLED ALARM CLOCK

Milton W. Jetter, 800 4th St., SW., Washington, D.C. 20024

Filed Mar. 17, 1980, Ser. No. 131,122
Int. Cl.³ G04C 11/02, 21/16; G04B 23/00
U.S. Cl. 368—47 20 Claims



1. An alarm clock system comprising a clock movement including alarm starting means for producing an electrical alarm signal, means to generate an audible alarm responsive to said electrical alarm signal, manually operated deactivation switch means, circuit means to deactivate said audible alarm immediately upon manual operation of said deactivation switch means, and completely responsive to continuous manual operation of said deactivation switch means for a predetermined extended period of time, a visual indicator adjacent said deactivation switch means, means to energize said visual indicator when said deactivation switch means becomes manually operated, and means to deenergize said visual indicator responsive to the continuous manual operation of said deactivation switch means for said predetermined extended period of time.

4,316,274

BATTERY LIFE INDICATION METHOD FOR AN ELECTRONIC TIMEPIECE

Kenichi Ushikoshi, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

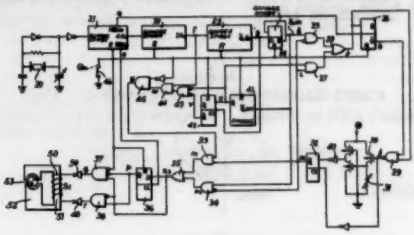
Filed Jan. 29, 1979, Ser. No. 7,533
Claims priority, application Japan, Jan. 27, 1978, 53/8081; Jan. 27, 1978, 53/8082; Jan. 27, 1978, 53/8083
Int. Cl.³ G04B 9/00
U.S. Cl. 368—66 16 Claims

1. A method for indicating the diminished output of the power source in an electronic analog timepiece having hands

to indicate the time, and driving means to advance said hands, comprising the steps of:

(a) detecting the diminished output of the power source;

(b) altering the rate of driving said hands from the normal rate of driving said hands whereby the time indicated by said hands deviates from real time;



(c) driving said hands at said normal rate;

(d) repeating step (b), again altering said rate, whereby said hands further deviate from real time;

(e) continuously repeating steps (c) and (d).

4,316,275

CHARGING CONTROL CIRCUIT FOR ELECTRONIC TIMEPIECE

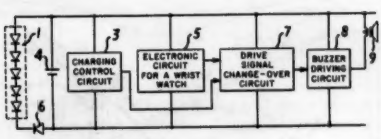
Junichi Tabata, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Jun. 27, 1980, Ser. No. 163,883

Claims priority, application Japan, Jun. 28, 1979, 54-081622

Int. Cl.³ G04B 9/00

U.S. Cl. 368—66 **4 Claims**


CHARGING CONTROL CIRCUIT
ELECTRONIC CIRCUIT FOR A WRIST WATCH
DRIVE SIGNAL CHANGE-OVER CIRCUIT
BUZZER DRIVING CIRCUIT

1. An electronic timepiece, comprising:

an electronic timepiece circuit comprising means for generating a time alarm signal;

an electric power source for powering said electronic timepiece circuit, said electric power source comprising a rechargeable secondary power cell and charging means for charging said power cell;

a charging control circuit for detecting the voltage of said secondary power cell and for generating an output control signal when said secondary power cell is excessively charged;

alarm means responsive to a drive signal for generating an alarm; and

drive signal change-over means responsive to the time alarm signal from said electronic timepiece circuit for applying a drive signal to said alarm means to generate an alarm to indicate an alarm time and responsive to the control signal from said charging control circuit for applying a drive signal to said alarm means to generate an alarm to indicate that said secondary power cell is being excessively charged.

4,316,276

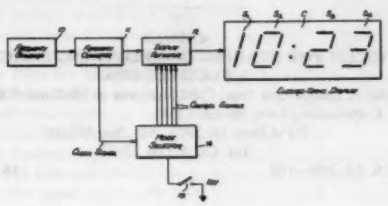
KEY-OPERATED SOLID-STATE TIMEPIECES

Dale R. Koehler, Westwood, and Jerrald A. Zupfer, River Vale, both of N.J., assignors to Bulova Watch Company, Inc., Flushing, N.Y.

Filed Aug. 15, 1974, Ser. No. 497,758

Int. Cl.³ G04C 17/00, 9/00

U.S. Cl. 368—70 **19 Claims**



1. In a solid-state timepiece wherein timing pulses are applied to an electro-optic display through an electronic actuator having switching means for selectively energizing the display to present in an aspect mode various aspects of time information, each reading of which is settable by means of roll-over pulses serving to advance the reading at a rapid rate; apparatus for effecting selection in the aspect mode or for rendering the display operative in the setting mode, said apparatus comprising:

(A) a manually-operated switching key which may be closed and thereafter released to produce code signals which depend on the length of time the key is closed and the number of key actions, and

(B) a mode selector operatively coupled to the switching means of said actuator and responsive to said code signals, said selector having logic means to decode said signals to produce respective command signals for effecting selective presentation of said aspects or for rendering said display operative in the setting mode.

4,316,277

ELECTRONIC CLOCK MOVEMENT ASSEMBLY

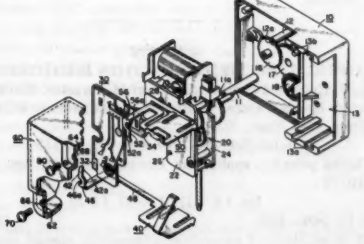
Itaru Endo, Showa, Japan, assignor to Rhythm Watch Company Limited, Tokyo, Japan

Filed Jul. 10, 1980, Ser. No. 168,201

Claims priority, application Japan, Jul. 13, 1979, 54-96685[U]

Int. Cl.³ G04B 19/00; G04C 23/02

U.S. Cl. 368—76 **3 Claims**



1. An electronic clock movement structure comprising:

gear train combination in which sets of gear trains are held among plural supporting plates at predetermined distances;

a lower case holding said gear train combination;

a circuit base plate arranged to be attached to said lower case and said supporting plates;

resilient contact plates facingly arranged to conductive portions of said circuit base plate;

an upper case fixed to said lower case and including pressing portions which engage with said contact plates; and

said electronic clock movement structure being characterized in that attachment of said upper case to said lower case applies pressure to said contact plates to electrically connect said contact plates with said circuit base plate and holdingly attach said gear train combination to said lower case.

4,316,278

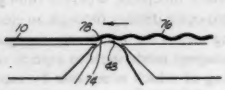
SYSTEM FOR READING OR RECORDING INDICIA ON A FLEXIBLE DISC

Paul A. Endter, San Jose, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Dec. 13, 1979, Ser. No. 103,027

Int. Cl.³ G11B *17/32*

U.S. Cl. 369—100 **16 Claims**



1. Apparatus for stabilizing a rotating disc comprising:

(a) first means for defining a substantially flat surface disposed adjacent but not in contact with one surface of said disc;

(b) second means for defining an elongated curved surface disposed adjacent but not in contact with the other surface of said disc;

(c) aligning means for positioning said first and second means opposed each other in spaced apart relation to receive said disc therebetween; and

(d) optical means mounted in said first and second means for detecting and recording information containing indicia on said disc, said optical means mounted in said second means being relatively offset from a plane passing through the vertical axis of said second means orthogonal and radial to said disc in the direction of rotation of said disc while retaining optical integrity to place said optical means in said second means at a point of zero pressure differential substantially across said disc during operational rotation thereof.

4,316,279

OPTICAL RECORDING IN THIN PHOTORESIST

John P. Russell, Pennington; Arthur H. Firester, Skillman, and Istvan Gorog, Princeton, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 28, 1979, Ser. No. 16,111

Claims priority, application United Kingdom, Sep. 4, 1978, 35510/78

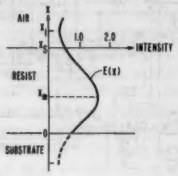
Int. Cl.³ G11B *7/00, 11/12*

U.S. Cl. 369—109 **10 Claims**

10. A method of recording information signals modulated within a given frequency range on a storage medium using a coherent light beam of a given wavelength incident on a surface of said storage medium, wherein said incident coherent light beam interacts with the coherent light beam reflected from a surface of said storage medium to form an optical standing wave, comprising the steps of:

coating one surface of a substrate with a layer of non-linear radiant energy sensitive material to a thickness greater than the first standing wave maximum of said optical standing wave in said radiant energy sensitive material but less than the first standing wave minimum of said optical standing wave in said radiant energy sensitive material;

moving said coated substrate relative to said intensity modulated coherent light beam thereby exposing said radiant energy sensitive material with said modulated coherent light beam in a pattern representative of said modulated information; and



developing the radiant energy sensitive material exposed by the modulated light beam for a time period sufficient to form a track having geometric variations therein representative of the modulated information in said radiant energy sensitive material, the depth of said geometric variations at the high frequency end of said given frequency range substantially equal to the depth of said geometric variations at the low frequency end of said given frequency range.

4,316,280

COMPENSATOR FOR THE HORIZONTAL ANGULAR ERROR OF A RECORD PLAYER ARM

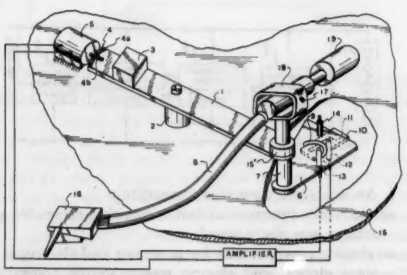
Peter K. Kanchev, Sofia, Bulgaria, assignor to Bulgarsko Radio, Sofia, Bulgaria

Filed Jun. 2, 1980, Ser. No. 155,135

Claims priority, application Bulgaria, May 31, 1979, 43791

Int. Cl.³ G11B *21/02*

U.S. Cl. 369—250 **4 Claims**



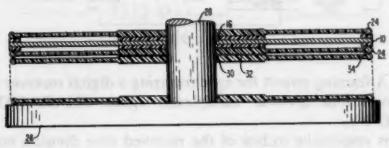
1. A compensator for the horizontal angular error of a record player arm, comprising a first lever disposed in the horizontal plane beneath the player arm, a first, fixedly positioned bearing supporting an intermediate portion of the first lever whereby the first lever can rotate in a horizontal plane, the first lever having a bearing on a first end thereof journalling a vertically rotatable shaft, means of the upper end of the shaft mounting the player arm thereon for horizontal movement upon rotation of the shaft while permitting the player arm a degree of free vertical movement with respect to the shaft, an electric motor having a driving shaft, means connecting the driving shaft of the motor to the first lever so that the motor when energized turns the lever about the first bearing, a second lever in the form of a flat horizontal optical mask affixed to the vertical shaft to rotate therewith, the optical mask having an

arch-shaped slit therein which is convex in the direction away from the axis of the vertical shaft, a source of light disposed close to the optical mask on one side thereof, two spaced photo-receivers disposed on the other side of the optical mask, a blind disposed between the optical mask and the two photo-receivers, the blind having a linear slit therein directed radially of the vertical shaft, and means connecting the two photo-receivers to the electric motor so as to energize the motor to drive the first lever constantly to seek a position which the illuminations of the two photo-receivers are equal.

4,316,281
SPACER FOR STACKED RECORDED DISCS

John J. Prusak, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 22, 1980, Ser. No. 189,349
Int. Cl.³ G11B *3/62*; B65D *85/02, 85/57, 81/02*
U.S. Cl. 369—291 **10 Claims**

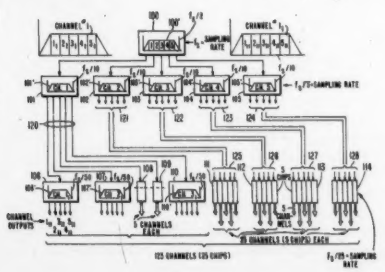


1. A spacer for use between two adjacent recorded discs in a stack of said discs comprising a flat circular relatively rigid plate having opposed major surfaces and a hole through the center thereof, said plate having portions around its peripheral edge and the edge of the hole which are thicker than the rest of the plate, with the thicker portions being of substantially uniform thickness.

4,316,282
MULTICHANNEL FREQUENCY TRANSLATION OF SAMPLED WAVEFORMS BY DECIMATION AND INTERPOLATION

Nicola A. Macina, Chatham, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 23, 1979, Ser. No. 96,743
Int. Cl.³ H04J *1/05*
U.S. Cl. 370—70 **6 Claims**



1. A system for frequency division multiplexing a received broad band signal into k^m signal channels each capable of containing a baseband spectral component and comprising:

means for supplying first sampling and de-sampling signals having predetermined frequency ratios with respect to the bandwidth of said received broad band signal;

m descending tiers of identical channel division modules each comprising first logic means with the first tier thereof comprising a first of said modules whose logic means is responsive to the received broad band signal and to said first sampling and de-sampling signals to divide such broad band signal into k new signal channels each containing a baseband spectral component;

means for supplying separate sampling and de-sampling signals to the modules of each successive tier of modules positioned in descending manner below said first tier with each of said separate sampling and desampling signals having frequencies bearing said predetermined ratios to the bandwidth of the spectral component to be sampled and desampled thereby;

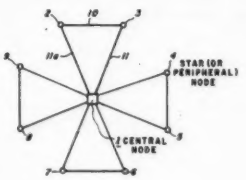
each module of each successive tier of modules comprising second logic means responsive to the spectral component contained in individual ones of the signal channels created by from the immediately preceding higher order tier of modules and to the sampling and de-sampling signals individual thereto to form k new additional channels each containing a baseband spectral component; and

each baseband spectral component having an upper bandwidth limit which bears the same ratio to its sampling rate as the upper bandwidth limit of the originally received broad band signal bears to its sampling rate.

4,316,283
TRANSPARENT INTELLIGENT NETWORK FOR DATA AND VOICE

Mehmet E. Ulug, Ottawa, Canada, assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 912,116, Jun. 2, 1978, abandoned. This application Apr. 14, 1980, Ser. No. 139,914
Int. Cl.³ H04J *6/00*
U.S. Cl. 370—94 **8 Claims**



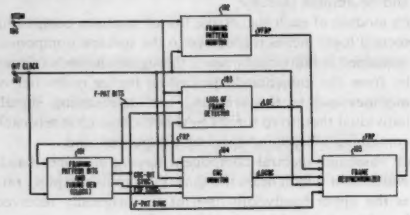
1. A communication network for data and voice having a first node and a plurality of other nodes, interconnecting means connecting said first node with said plurality of other nodes, a first customer X.25 computer connected to said first node, a corresponding plurality of customer equipments connected to said plurality of other nodes, said first customer X.25 computer normally generating and transmitting to said first node first electrical signals representing data and second electrical signals according to X.25 protocol identifying their destination and means at said first node for distinguishing between said protocol-representing signals and said data-representing signals, and for transmitting to said plurality of other nodes only said data representing signals, means at said plurality of other nodes for forwarding to the respective customer equipments those of said data representing signals addressed to the respective customers, means at said plurality of other nodes responsive to the receipt of data-representing signals originating from said corresponding plurality of customer equipments for transmitting them to said first node, and means at said first node for recognizing customers from whom said last mentioned data-representing signals originated and for adding X.25 protocol signals identifying origination for transmission to said first customer X.25 computer.

4,316,284

FRAME RESYNCHRONIZATION CIRCUIT FOR DIGITAL RECEIVER

Robert D. Howson, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 11, 1980, Ser. No. 186,403
Int. Cl.[3] H04J 3/06; H04K 7/04
U.S. Cl. 370—105 9 Claims



1. A framing circuit for synchronizing a digital receiver to a received time division multiplexed signal, characterized by,

means responsive to bits of the received time division signal for generating in accordance with a prescribed criterion a code word having a predetermined number of bits,

means for comparing said code word bits with bits of the received time division signal to generate code word error indications,

means for counting a predetermined number of consecutive ones of said code word error indications to generate a resynchronization initiation signal, and

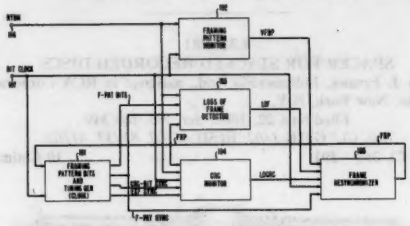
means utilizing said resynchronization initiation signal for determining whether a framing bit pattern the receiver is synchronized with is a false framing bit pattern.

4,316,285

FRAMING CIRCUIT FOR DIGITAL RECEIVER

Richard T. Bobilin, Fair Haven, and Robert D. Howson, Middletown, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 11, 1980, Ser. No. 186,404
Int. Cl.[3] H04J 3/06; H04K 7/04
U.S. Cl. 370—105 7 Claims



1. A framing circuit for synchronizing a digital receiver to a received time division multiplexed signal, CHARACTERIZED BY,

means responsive to bits of the received time division multiplexed signal for generating in accordance with a prescribed criterion a code word having a predetermined number of bits,

means for comparing said code word bits with bits of the received time division signal to generate code word error indications, and

means for utilizing said code word error indications to initiate resynchronizing of the receiver.

DESIGN PATENTS

GRANTED FEB. 16, 1982

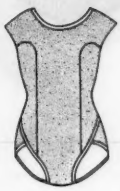
ERRATA

For CLASS	See PATENT NO.
D34–001	263,016
D34–011	263,017
D34–031	263,036
D32–033	263,052
D10–046	263,061

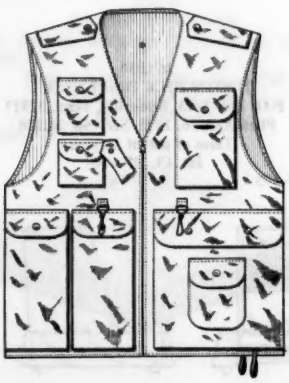
DESIGNS

FEBRUARY 16, 1982

263,005
GYMNAST'S SUIT
Michel Joseph, Saverne, France, assignor to ADIDAS Fabrique de Chaussures de Sport, Landersheim, France
Filed Apr. 4, 1980, Ser. No. 137,497
Claims priority, application France, Oct. 5, 1979, 79 363
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—36



263,006
PHOTOGRAPHER'S ACCESSORY VEST
Irving Boker, 41-10 Twenty Second St., New York, N.Y. 10010
Filed Nov. 28, 1979, Ser. No. 98,031
Term of patent 7 years
Int. Cl. D2—*02*
U.S. Cl. D2—190



263,007
SEAT
Alan F. Styman, and Ronald P. Hickman, both of Jersey, Channel Islands, assignors to Tekron Licensing B.V., De Leersum, Netherlands
Filed Feb. 6, 1980, Ser. No. 118,989
Claims priority, application United Kingdom, Aug. 8, 1979, 991114/79
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—26

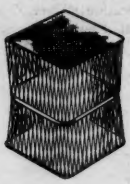
263,008
CHAIR
Bruce Dowse, Rockdale, Australia, assignor to Dowse Designs Pty. Limited, Sydney, Australia
Filed Dec. 12, 1978, Ser. No. 968,823
Claims priority, application New Zealand, Jun. 13, 1978, 15535
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—73

263,009
AUXILIARY TOILET PAPER ROLL HOLDER
Charles B. O'Keefe, 2579 N. Miller Rd., Scottsdale, Ariz. 85257
Filed Oct. 15, 1979, Ser. No. 84,591
Term of patent 14 years
Int. Cl. D23—*02;* D6—*06*
U.S. Cl. D6—97

263,010
DRAWER BACK BEARING
Thomas R. Marsh, Kernersville, N.C., assignor to The Hughes Supply Company of Thomasville, Incorporated, Thomasville, N.C.
Filed Apr. 25, 1980, Ser. No. 143,657
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191

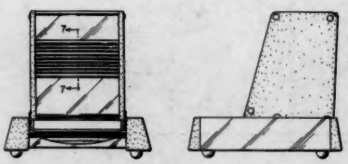
263,011
PANEL FOR A CHAIR BACK
David L. Lee, 1841 Port Margate Pl., Newport Beach, Calif. 92660, and Harry J. O'Connor, 26992 LaPaja, Mission Viejo, Calif. 92675
Division of Ser. No. 930,585, Aug. 1, 1978. This application Nov. 10, 1980, Ser. No. 205,692
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—193

263,012
FURNITURE BASE
Donald E. Hanaford, Phoenix, Ariz., assignor to Arthur E. Thomson, Palm Springs, Calif.
Filed Oct. 16, 1978, Ser. No. 951,466
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—194

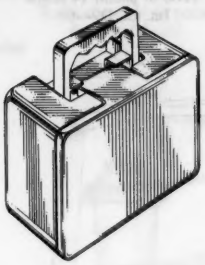


263,013
FOLDABLE CLOTHES HANGER
Connie C. Angeles, 1814 Waihee St., Honolulu, Hi. 96819
Filed Dec. 5, 1979, Ser. No. 100,423
Term of patent 14 years
Int. Cl. D6—*08*
U.S. Cl. D6—250

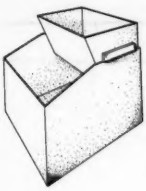
263,014
TOOTH PICK DISPENSER
Jack Allen, P.O. Box 3443, Knoxville, Tenn. 37917
Filed Apr. 16, 1979, Ser. No. 30,228
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—75



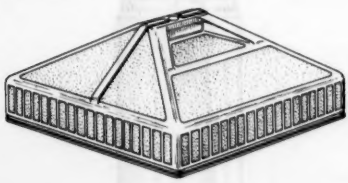
263,015
LUNCH BOX
Peter T. Loncasty, 5513 S. College Ave., Tempe, Ariz. 85283
Filed Jan. 21, 1980, Ser. No. 113,489
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—76



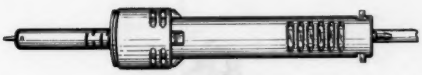
263,016
WASTEBASKET OR THE LIKE
Robert L. Keller, 527 Eastlake East, #109, Seattle, Wash. 98109
Filed Jul. 2, 1979, Ser. No. 53,742
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D34—1



263,017
TRASH CAN COVER
Thomas E. Douglas, Reidsville, N.C., assignor to Zarn, Inc., Reidsville, N.C.
Filed Aug. 13, 1979, Ser. No. 65,760
Term of patent 14 years
Int. Cl. D07—*07*
U.S. Cl. D34—11



263,018
SOLDER EXTRACTOR
William E. Scheu, 22 Sedgmere Rd., Center Morchies, N.Y. 11934
Filed Feb. 9, 1979, Ser. No. 10,636
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—30



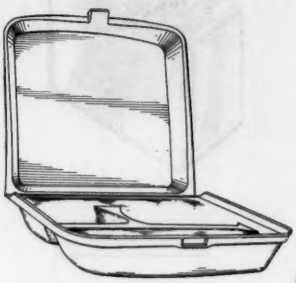
263,019
DRILL HARNESS
Jonas Samuelsson, 15 Syrénvägen, Orebro, Sweden
Filed Jan. 3, 1979, Ser. No. 769
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—70

263,020
RETRACTABLE KNIFE
David M. Rau, III, 1808 Dakota St., Lincoln, Nebr. 68502
Filed Jan. 22, 1980, Ser. No. 114,256
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—99

263,021
CABLE HANGER
Frederick R. Siegfried, New Brighton, Minn., assignor to Burlington Norther, Inc., St. Paul, Minn.
Filed Jan. 31, 1978, Ser. No. 874,037
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—373

263,022
VIBRATION ISOLATOR OR SIMILAR ARTICLE
Daniel T. Lilley, Jr.; Elliott H. Berger, both of Indianapolis, and John A. Passanisi, Zionsville, all of Ind., assignors to E-A-R Corporation, Indianapolis, Ind.
Filed Aug. 23, 1979, Ser. No. 68,979
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—402

263,023
PACKAGING FOR FOOD CONTAINER OR THE LIKE
Nicholas D. Commisso, Victor, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Jun. 27, 1977, Ser. No. 810,558
The portion of the term of this patent subsequent to Feb. 9, 1996, has been disclaimed.
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—347



263,024
CAN OR SIMILAR ARTICLE
Michael L. Atkinson, Lakewood, and Edward C. Miller, Broomfield, both of Colo., assignors to Ball Corporation, Muncie, Ind.
Filed Apr. 5, 1979, Ser. No. 26,887
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—351

263,025
BOTTLE
Robert L. Schoeneck, Wauwatosa; William C. Smith, Greenlake; Wallis I. Hoyle, Brookfield, all of Wis.; Clark E. Swayze; Terry L. Carder, both of Midland, Mich., and Albert N. Theriault, Auburn, Mich., assignors to Schoeneck Containers, Inc., New Berlin, Wis.
Filed Aug. 20, 1979, Ser. No. 67,830
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—404

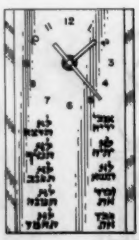
263,026
BOTTLE
Timothy J. Beechuk, Batavia, Ohio, and John Pardo, Yonkers, N.Y., assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Dec. 26, 1979, Ser. No. 106,957
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—404

263,027
COMBINED OIL TEMPERATURE AND OIL LEVEL GAUGE FOR MOTORCYCLES
Jimmie D. Loving, 118 W. Armijo, Monrovia, Calif. 91016
Filed Sep. 28, 1979, Ser. No. 79,875
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—57

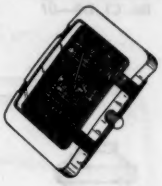
263,028
COMBINED TOY BEAR AND CAGE CHARM
Ira B. Gilford, Ridgewood, N.J., assignor to Lawrence L. Reiner, Woodbury, N.Y.
Filed Feb. 27, 1980, Ser. No. 125,043
Term of patent 14 years
Int. Cl. D11—*01*; D21—*01*
U.S. Cl. D11—2

263,029
PENDANT
Donald R. MacFaden, Orleans, Mass., assignor to Stardate, Inc., Orleans, Mass.
Filed Sep. 6, 1979, Ser. No. 73,078
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—79

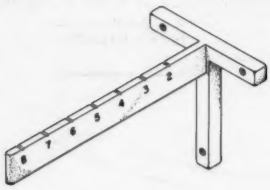
263,030
WALL CLOCK
Peter D. George, 411-413 N. Federal Hwy., Hallandale, Fla. 33009
Filed Apr. 4, 1980, Ser. No. 137,239
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—24



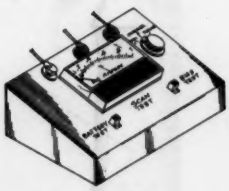
263,031
WATCH
Alain Carre, Paris, France, assignor to Waterman S.A., France
Filed Jun. 27, 1979, Ser. No. 52,400
Claims priority, application France, Feb. 16, 1979, 77 316
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—39



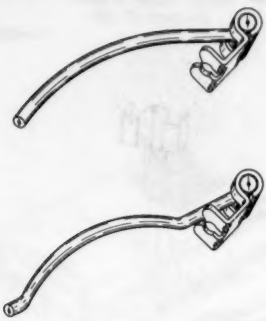
263,032
PLUMB BOB SUPPORTING VERTICAL ALIGNMENT GAUGE OR THE LIKE
Burl O. Amos, 1205-A Manassa Ct., Raleigh, N.C. 27609
Filed Jul. 26, 1979, Ser. No. 60,898
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—70



263,033
HOLTER RECORDER TESTING DEVICE
George M. Calhoun, Villanova, Pa.
Filed Jul. 5, 1979, Ser. No. 54,664
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—78

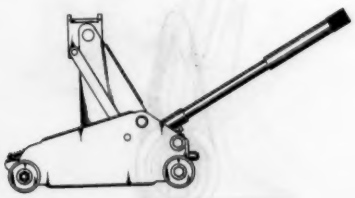


263,034
JEWELRY CLIP OR THE LIKE
Paul V. Little, 67 Meadow La., Old Field, N.Y. 11785
Continuation-in-part of Ser. No. 877,794, Feb. 14, 1978, abandoned. This application Jun. 5, 1980, Ser. No. 156,564
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—87

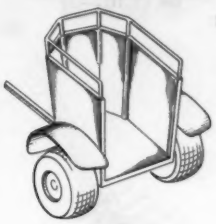


263,035
SNOW COASTER
James F. Frechette, Jr., Rte. 4, Box 15, Rhinelander, Wis. 54501
Filed Oct. 31, 1979, Ser. No. 89,890
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—8

263,036
JACK
Mao-Hsiung Hung, 6th Fl., 65, Sec. 3, Nan-Ching E. Rd., Taipei, Taiwan (ROC)
Filed Jun. 1, 1979, Ser. No. 44,702
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D34—31

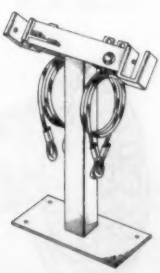


263,037
CHARIOT
Arnold C. Brown, 19424 Valerio St., Reseda, Calif. 91335
Filed Feb. 27, 1979, Ser. No. 15,714
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—105



263,038
MOTORCYCLE
Heiji Kobayashi, 19-16, Shimoochiai 2-chome, Shinjuku-ku, Tokyo, Japan
Filed Jun. 18, 1979, Ser. No. 49,076
Claims priority, application Japan, Jan. 13, 1979, 54-945
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—110

263,039
LOCKING BICYCLE STAND
J. Berchman Richard, Jr., 5634 Fallbrook Ave., Woodland Hills, Calif. 91364
Filed Oct. 19, 1979, Ser. No. 86,272
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—115



263,040

SET OF AIR DEFLECTORS FOR A VEHICLE

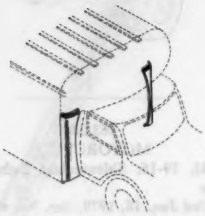
Joseph M. Fitzgerald, and James P. Fitzgerald, both of Buena Park, Calif., assignors to Nose Cone Manufacturing Co., Inc., Buena Park, Calif.

Filed Jun. 19, 1980, Ser. No. 161,124

Term of patent 14 years

Int. Cl. D12—*16*

U.S. Cl. D12—181



263,041

TIRE FOR A VEHICLE WHEEL

Peter Ingley, Birmingham, England, assignor to Dunlop Limited, West Midlands, England

Filed Oct. 16, 1978, Ser. No. 951,838

Claims priority, application United Kingdom, May 30, 1978, 984857

Term of patent 14 years

Int. Cl. D12—*15*

U.S. Cl. D12—148

263,042

WINGED-COLLAR HEAT SINK FOR ELECTRONIC DEVICES

Alfred F. McCarthy, Belmount, N.H., assignor to Aavid Engineering, Inc., Laconia, N.H.

Filed Apr. 24, 1979, Ser. No. 32,922

Term of patent 14 years

Int. Cl. D13—*03*

U.S. Cl. D13—23

263,043

HEADSET FOR ONE-WAY PRIVATE CHANNEL RADIO COMMUNICATIONS SYSTEM

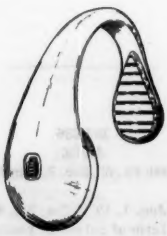
Ross J. Petrie, Ft. Lauderdale, Fla., assignor to Doris J. Leeds, Miami Beach, Fla.

Filed Jan. 23, 1980, Ser. No. 114,728

Term of patent 14 years

Int. Cl. D14—*01*

U.S. Cl. D14—36



263,044

COMBINED CASSETTE DICTATING MACHINE AND MICROPHONE THEREOF

Werner Schulze-Bahr, Kassel, Fed. Rep. of Germany, assignor to Assmann G.m.b.H., Bad Homburg, Fed. Rep. of Germany

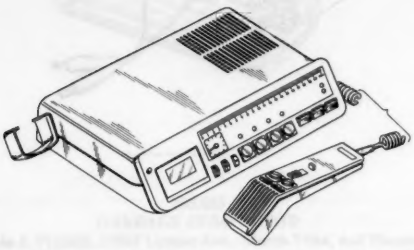
Filed Oct. 10, 1978, Ser. No. 950,229

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1978, 10542

Term of patent 7 years

Int. Cl. D14—*01*

U.S. Cl. D14—3



263,045

COMBINED TELEPHONE SET AND BASE THEREFORE

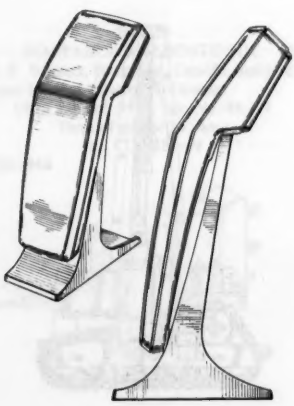
George M. Janda, Wheaton, and Richard E. Cobb, Western Springs, both of Ill., assignors to GTE Automatic Electric Labs Inc., Northlake, Ill.

Filed Dec. 28, 1979, Ser. No. 107,953

Term of patent 14 years

Int. Cl. D14—*03*

U.S. Cl. D14—53



263,046

TELEPHONE SET

Donald M. Genaro, Haworth, N.J., and John N. McGarvey, Drexel Hill, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 12, 1979, Ser. No. 84,524

Term of patent 14 years

Int. Cl. D14—*03*

U.S. Cl. D14—53

263,047

TELEPHONE BASE

Peter D. H. Trussler, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Aug. 17, 1979, Ser. No. 67,570

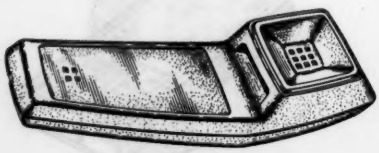
Term of patent 14 years

Int. Cl. D14—*03*

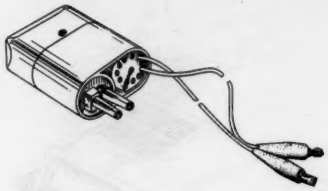
U.S. Cl. D14—60

263,048
TELEPHONE HANDSET
Donald M. Genaro, Haworth, N.J., and John N. McGarvey, Drexel Hill, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Oct. 12, 1979, Ser. No. 84,068
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—63

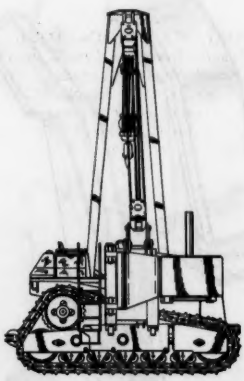
263,049
HOUSING FOR A TELEPHONE HANDSET
Richard E. Cobb, Western Springs, Ill., assignor to GTE Automatic Electric Labs Inc., Northlake, Ill.
Filed Dec. 28, 1979, Ser. No. 108,256
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—63



263,050
MOTOR OIL DRAIN PUMP
Kyung T. Chang, Sinkil-Dong, Rep. of Korea, assignor to Han Baek Trading Co., Ltd., Seoul, Rep. of Korea
Filed Aug. 31, 1979, Ser. No. 71,091
Term of patent 7 years
Int. Cl. D15—*02*
U.S. Cl. D15—7



263,051
PIPELAYER
Jan K. Allen, Chillicothe, and Phillip W. Hess, East Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Jul. 16, 1979, Ser. No. 57,863
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D15—24



263,052

VACUUM CLEANER NOZZLE

Yoshiaki Ueda, Toyonaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

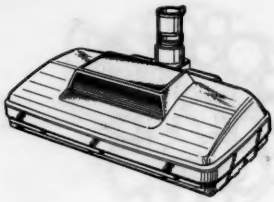
Filed Dec. 12, 1978, Ser. No. 968,704

Claims priority, application Japan, Jun. 14, 1978, 53-25009

Term of patent 14 years

Int. Cl. D15—*05*

U.S. Cl. D32—33



263,053

GARBAGE COMPACTOR

Louie J. Franich, 21865 Lomita Ave., Monta Vista, and Thomas H. Clarke, Jr., 10061 Pasadena Ave., Cupertino, both of Calif. 95014

Filed Jul. 9, 1979, Ser. No. 56,095

Term of patent 14 years

Int. Cl. D15—*09*

U.S. Cl. D15—98

263,054

PORTABLE WELDING TOOL

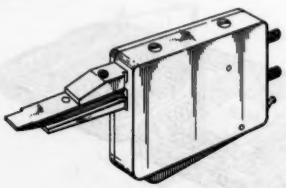
Reginald B. P. Bennett, Brampton, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jun. 18, 1979, Ser. No. 49,201

Term of patent 14 years

Int. Cl. D15—*04*

U.S. Cl. D15—144



263,055

COOLANT DRIP PAN

Dan E. Perry, and Danny V. Perry, both of Duncan, Okla., assignors to Perry and Perry, Inc., Duncan, Okla.

Filed Feb. 27, 1980, Ser. No. 125,164

Term of patent 14 years

Int. Cl. D15—*09*

U.S. Cl. D15—150

263,056

CAMERA

Yasuo Hattori, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

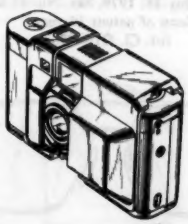
Filed Aug. 1, 1979, Ser. No. 62,691

Claims priority, application Japan, Feb. 7, 1979, 54/4297

Term of patent 14 years

Int. Cl. D16—*01*

U.S. Cl. D16—5



263,057

MICROSCOPE

Heinrich Janke, Braunfeld, and Hans-Kurt Uellenberg, Edingen, both of Fed. Rep. of Germany, assignors to Ernst Leitz Wetzlar GmbH, Wetzlar, Fed. Rep. of Germany

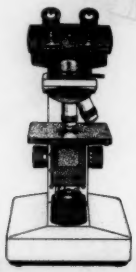
Filed Jun. 7, 1979, Ser. No. 46,313

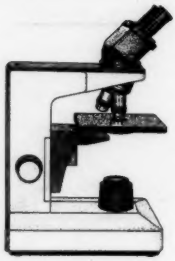
Claims priority, application Fed. Rep. of Germany, Dec. 8, 1978, 5MR200

Term of patent 14 years

Int. Cl. D16—*06*

U.S. Cl. D16—131





263,058

PAIR OF SPECTACLES

David W. Johnsen, Woodstock, Conn., assignor to American Optical Corporation, Southbridge, Mass.

Filed May 25, 1979, Ser. No. 42,698

Term of patent 14 years

Int. Cl. D16—*06*

U.S. Cl. D16—117

263,059

LABEL DISPENSER OR THE LIKE

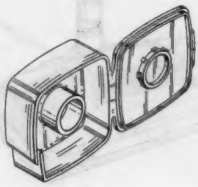
Jack V. Croyle, North Providence, R.I., and Rino Conti, Stoughton, Mass., assignors to Dart Industries Inc., Los Angeles, Calif.

Filed Aug. 16, 1979, Ser. No. 66,905

Term of patent 14 years

Int. Cl. D19—*02*

U.S. Cl. D19—69



263,060

LABEL FOR A CASSETTE HOLDER

Keiichi Yoshizawa, Tokyo, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Aug. 6, 1979, Ser. No. 63,694

Claims priority, application Japan, Feb. 7, 1979, 54-4207

Term of patent 14 years

Int. Cl. D19—*08*

U.S. Cl. D20—27

263,061

CRIBBAGE GAME BOARD

Harold F. Lease, San Mateo, Calif., assignor to Fred Roberts Co., San Francisco, Calif.

Filed Feb. 11, 1980, Ser. No. 120,211

Term of patent 14 years

Int. Cl. D21—*01*

U.S. Cl. D10—46.1

263,062

BUBBLE MAKER TOY

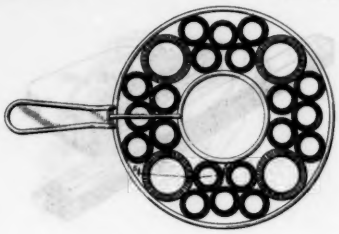
Kurt S. Rasmussen, Oak Park, Ill., assignor to Strombecker Corporation, Chicago, Ill.

Filed Nov. 15, 1979, Ser. No. 94,484

Term of patent 14 years

Int. Cl. D21—*01*

U.S. Cl. D21—61



263,063

KINETIC SCULPTURE

Hidetoshi Matsui, 6, Imazunaka 3-chome, Tsurumi-ku, Osaka 538, Japan

Filed Jun. 25, 1979, Ser. No. 52,210

Claims priority, application Japan, May 25, 1979, 54-21551

Term of patent 14 years

Int. Cl. D11—*02*

U.S. Cl. D21—102

263,064

KINETIC SCULPTURE

Hidetoshi Matsui, 6-27-311, Imazunaka 3-chome, Tsurumi-ku, Osaka, Japan

Filed Sep. 4, 1979, Ser. No. 72,533

Claims priority, application Japan, Apr. 6, 1979, 54-14085

Term of patent 14 years

Int. Cl. D11—*02*

U.S. Cl. D21—102

263,065

KINETIC SCULPTURE

Hidetoshi Matsui, 6-27-311, Imazunaka 3-chome, Tsurumi-ku, Osaka, Japan

Filed Oct. 24, 1979, Ser. No. 88,208

Claims priority, application Japan, Aug. 10, 1979, 54-33653

Term of patent 14 years

Int. Cl. D11—*02*

U.S. Cl. D21—102

263,066

INFLATABLE SADDLE FOR AN AQUATIC GAME

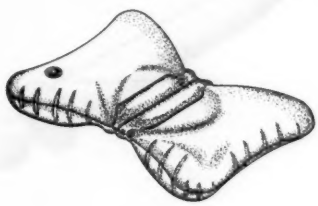
Dennis H. Merino, 2873 King Edward Dr., El Dorado Hills, Calif. 95630, and J. Clyde Ralph, 2773 Curtis Way, Sacramento, Calif. 95818

Filed Feb. 25, 1980, Ser. No. 123,992

Term of patent 14 years

Int. Cl. D21—*02*

U.S. Cl. D21—237



263,067

FIREARM CLIP CARRIER

Richard D. E. Nichols, Failbrook, Calif., assignor to Bianchi Leather Products, Inc., Temecula, Calif.

Filed Dec. 7, 1979, Ser. No. 101,288

Term of patent 14 years

Int. Cl. D3—*02*; D22—*05*

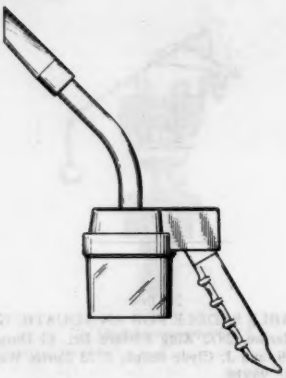
U.S. Cl. D22—14

263,068

VACUUM OPERATED INSECT COLLECTOR

Robert W. Knebel, Naples, N.Y. 14512

Filed Mar. 24, 1980, Ser. No. 133,638
Term of patent 7 years
Int. Cl. D22—*06*
U.S. Cl. D22—19

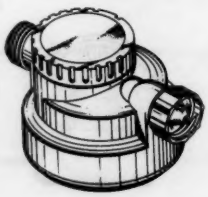


263,069

SPRINKLER CONTROL VALVE

Ho Chow, River Edge, N.J., and Tim M. Uyeda, South San Gabriel, Calif., assignors to Beatrice Foods Co., Moonachie, N.J.

Filed May 1, 1980, Ser. No. 145,805
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—38

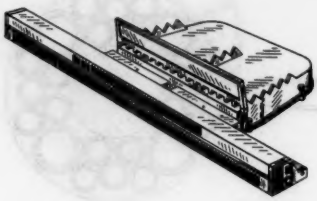


263,070

LOW PROFILE FORCED AIR FIREPLACE FURNACE

Thomas V. Metz, Portland, and W. James Sirois, Beaverton, both of Oreg., assignors to Pacific Fireplace Furnishings, Inc., Tualatin, Oreg.

Filed Mar. 26, 1979, Ser. No. 23,609
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—95



263,071

PIVOTABLE LATCH TO COVER HOLE IN STOVEPIPE

Murray L. Merritt, R.R. #1, Meaford, Ontario, Canada (N0H 1Y0)

Filed Apr. 27, 1979, Ser. No. 34,488
Claims priority, application Canada, Feb. 28, 1979, 2802793
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—163

263,072

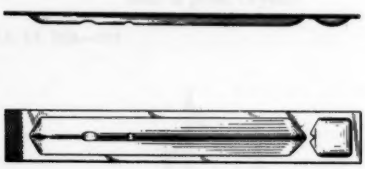
PIVOTABLE LATCH TO COVER HOLE IN STOVEPIPE

Murray L. Merritt, R.R. #1, Meaford, Ontario, Canada (N0H 1Y0)

Filed Apr. 27, 1979, Ser. No. 34,489
Claims priority, application Canada, Feb. 28, 1979, 2802794
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—163

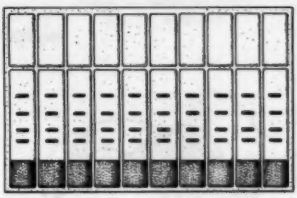
263,073
DEVICE FOR TREATING DENTURES WITH ANTI-CARIES PREPARATION
Martinus K. P. Jonkers, Burg. Verheugtstraat 49, Mierlo, and Johan J. Carpay, De Laren 1, Erp, both of Netherlands
Filed Apr. 3, 1978, Ser. No. 893,138
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—10

263,074
CULTURE SWAB TRANSPORT PACKAGE WITH RUPTURABLE SEALED SECTION HAVING A STORED CULTURE MEDIUM
Edwin W. Mason, Wyckoff, N.J., assignor to Mason-Keller Corporation, Roseland, N.J.
Filed Sep. 14, 1979, Ser. No. 75,727
Term of patent 14 years
Int. Cl. D24—*02;* D9—*04*
U.S. Cl. D24—17

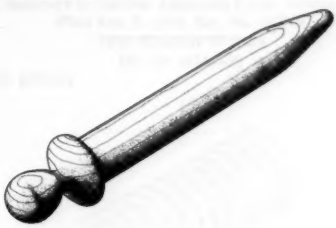


263,075
COMBINED EAR WAX REMOVER AND TOOTH PICK
Duc Doan, 7814 S. San Pedro St., Los Angeles, Calif. 90003
Filed Nov. 20, 1979, Ser. No. 96,011
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—23

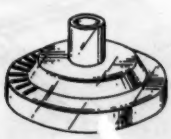
263,076
MULTIPLE POUCH SURGICAL INSTRUMENT HOLDER
Dan S. Sandel, 19524 Halsted, Northridge, Calif. 91324
Filed Nov. 13, 1979, Ser. No. 93,892
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—29



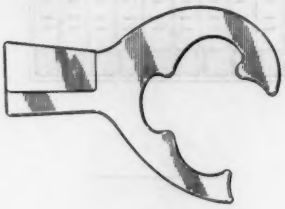
263,077
FOOT MASSAGE TOOL
Charles A. Stanton, 808 Woodland Ave., Winchester, Va. 22601
Filed Jan. 22, 1980, Ser. No. 114,168
Term of patent 14 years
Int. Cl. D24—*04;* D28—*03*
U.S. Cl. D24—36



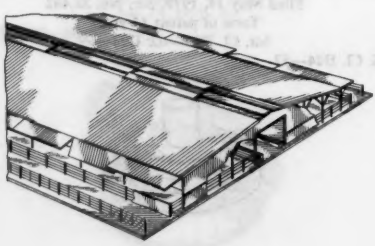
263,078
IN-LINE FILTER FOR LABORATORY USE
Roy T. Eddleman, Los Angeles, and Gregory F. Moran, Monrovia, both of Calif., assignors to Spectrum Medical Industries, Inc., Los Angeles, Calif.
Filed May 14, 1979, Ser. No. 38,462
Term of patent 14 years
Int. Cl. D24—*02;* D23—*99*
U.S. Cl. D24—52



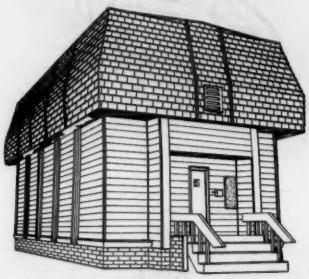
263,079
GLOVE FOR PROSTHETIC PREHENSILE HAND
Robert Radocy, 2860 Pennsylvania Ave., Boulder, Colo. 80303
Filed Nov. 1, 1979, Ser. No. 90,353
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D24—33



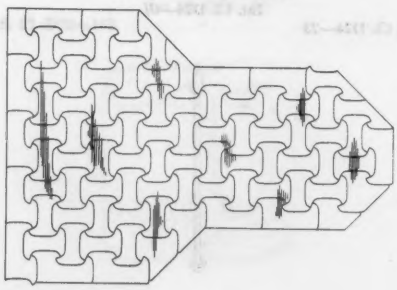
263,080
ANIMAL CONFINEMENT BARN
Richard E. Bunger, 5202 E. Washington St., Phoenix, Ariz. 85034
Filed Aug. 9, 1979, Ser. No. 65,354
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—22



263,081
RELOCATABLE BUILDING STRUCTURE FOR RACQUETBALL COURT
Mike E. Hunter, and J. Michael Hunter, both of Decatur, GA., assignors to Nuclear Assurance Corp., Atlanta, Ga.
Filed Feb. 21, 1980, Ser. No. 123,128
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—25

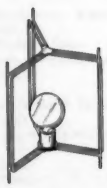


263,082
PAVING STONE UNIT
Peter O. S. Hass, 10 Aertebjergvej, 4660 Store Heddinge, Denmark
Filed May 15, 1978, Ser. No. 905,566
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—92



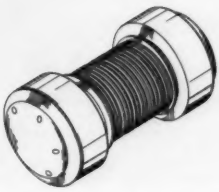
263,083
CANDLESTICK TYPE HOLDER FOR FLOATING CANDLES
Kenneth R. LeVan, Addison, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Jul. 16, 1979, Ser. No. 58,099
Term of patent 14 years
Int. Cl. D26—*01*
U.S. Cl. D26—11

263,084
ELECTRIC LAMP
Akira Suzuki, Tokyo, Japan, assignor to Kazusuke Takagi, Tokyo, Japan, a part interest
Filed Jul. 10, 1979, Ser. No. 56,223
Claims priority, application Japan, Mar. 27, 1979, 54-12177
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—111

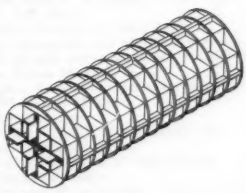


263,085
HAIR CURLING BRUSH
Matthew L. Andis, Racine, Wis., assignor to Andis Clipper Company, Racine, Wis.
Filed Feb. 11, 1980, Ser. No. 120,512
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—35

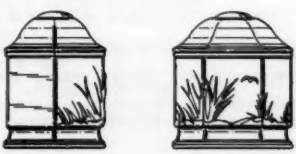
263,086
SPENT NUCLEAR FUEL SHIPPING CASK
Ralph E. Best, Dublin, Ohio; Richard L. Creedon, San Diego, Calif.; Michael E. Mason, Croton-on-Hudson, N.Y.; Harrison R. Panter, Norcross, Ga.; Richard A. Schreiber, Decatur, Ga., and Jack D. Rollins, Roswell, Ga., assignors to Nuclear Assurance Corp., Atlanta, Ga.
Filed Feb. 9, 1979, Ser. No. 10,948
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D29—6



263,087
BASKET FOR A SPENT NUCLEAR FUEL SHIPPING CASK
Ralph E. Best, Dublin, Ohio; Vijay Bhandari, Norcross, Ga.; Michael E. Mason, Croton-on-Hudson, N.Y.; Harrison R. Panter, Norcross, Ga., and Richard A. Schreiber, Decatur, Ga., assignors to Nuclear Assurance Corp., Atlanta, Ga.
Filed Feb. 9, 1979, Ser. No. 10,949
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D29—6



263,088
CREMATION URN
David E. Krech, Inver Grove Heights, Minn., assignor to DeKrech Enterprises, Inc., Inver Grove Heights, Minn.
Filed Nov. 8, 1979, Ser. No. 92,566
Term of patent 14 years
Int. Cl. D31—*00*
U.S. Cl. D99—5

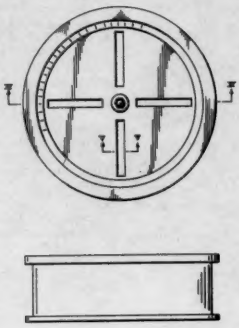


263,089

COLLECTION RECEPTACLE

Ransom Reaves, 679 E. McKellar, Memphis, Tenn. 38106, and Nokomis Yeldell, 4523 Westmont Cove, Memphis, Tenn. 38109

Filed Apr. 11, 1979, Ser. No. 29,139
Term of patent 14 years
Int. Cl. D99—*00*
U.S. Cl. D99—34



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TO WHOM

PATENTS WERE ISSUED ON THE 16TH DAY OF FEBRUARY, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A.S.E.D.: *See*—
Van Deraerschot, Raymond K. A., 4,315,834, Cl. 252-373.000.

A-T-O Inc.: *See*—
Carter, Sidney T., 4,315,478, Cl. 118-262.000.

Abe, Takeshi: *See*—
Mizuta, Toshiaki; Abe, Takeshi; Yoshihara, Ichiro; Saito, Kazuhito; and Tsuchiya, Keishin, 4,316,262, Cl. 364-900.000.

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ACF Industries, Incorporated: *See*—
Cordani, Eugene J.; and Vorwerk, Frederick E., 4,315,465, Cl. 105-4.00R.

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Hamprecht, Gerhard; Acker, Rolf-Dieter; and Wuerzer, Bruno, 4,316,015, Cl. 544-7.000.

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Elliott, John; Bell, Malcolm G.; and Lovatt, William J., 4,315,737, Cl. 432-241.000.
Lovatt, William J., 4,315,738, Cl. 432-258.000.

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Adam, Wilhelm; Ulrich, Hannsjorg; Dany, Franz-Josef; and Kalteyer, Gerd, to Hoechst Aktiengesellschaft. Production of striking surfaces for matches. 4,315,961, Cl. 427-385.500.

Adam, Wilhelm: *See*—
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Calvano, Michele, 4,315,357, Cl. 29-23.500.

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Schnall, Gunther; Aldenhoven, Klaus; and Blochl, Hanns, 4,315,736, Cl. 432-59.000.

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Fergg, Berthold; Nitsch, Wilhelm; and Pflugbeil, Mathias, 4,315,686, Cl. 355-38.000.

Agthe, Dieter P. H.: *See*—
Pfuhl, Hans P. H.; Agthe, Dieter P. H.; and Kreiner, Diethard G., 4,315,879, Cl. 264-117.000.

Ahamed, Syed V. Minimal delay rate-change circuits. 4,316,061, Cl. 179-15.55T.

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Savard, Guy; and Lee, Robert G. H., 4,315,774, Cl. 75-74.000.

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Prentice, Alan L.; and Filippi, Richard E., 4,315,409, Cl. 62-63.000.

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Kayser, John P.; and Rick, Norman A., 4,315,506, Cl. 128-276.000.

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Atkinson, Louis D.; and Rineck, Wesley W., 4,315,520, Cl. 137-82.000.

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Ishii, Masami; Kato, Nobuharu; and Hota, Mikio, 4,315,791, Cl. 156-304.200.

Aisin-Warner Kabushiki Kaisha: *See*—
Miki, Nobuaki; Sakakibara, Shiro; and Yokoyama, Fumitomo, 4,315,519, Cl. 137-56.000.

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Isono, Katsuo; and Akazawa, Susumu, 4,316,216, Cl. 358-67.000.

Akisue, Osamu; Yamada, Teruaki; Matsuo, Munetsugu; and Uehara, Norimasa, to Nippon Steel Corporation. Method of producing nonageing cold rolled steel strip with excellent deep-drawability by continuous heat treatment. 4,315,783, Cl. 148-12.00C.

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Yamazaki, Haruo; Ogata, Yoshiro; and Akutsu, Hidezoh, 4,316,122, Cl. 315-74.000.

Akzona Incorporated: *See*—
Bergfeld, Manfred; Zengel, Hans-Georg; and Praetorius, Heinz, 4,316,031, Cl. 546-175.000.

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Lell, Rainer; Al-Muddarris, Ghazi R.; and Pachaly, Reinhard, 4,315,904, Cl. 423-574.00R.

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Coplan, Myron J.; and Lopatin, George, 4,315,877, Cl. 264-45.900.
Turek, Mitchell C.; and Garab, H. Gary, 4,315,799, Cl. 162-353.000.

Albert, Thomas W. Chuck wrench for dental handpieces. 4,315,744, Cl. 433-126.000.

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Pitler, Richard K., 4,315,776, Cl. 75-208.00R.

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Allen, Samuel H., 4,315,625, Cl. 273-129.00L.

Allen, Roy A.: *See*—
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Booth, Frederick C.; Frantom, Richard L.; and Thomas, Rudy V., 4,315,639, Cl. 280-803.000.
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Alpers, Frederick C.: *See*—
McLean, James D.; Alpers, Frederick C.; Lanning, George R.; and Camphausen, Fred H., 4,315,609, Cl. 244-3.140.

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Sorenson, Wayne P., 4,315,721, Cl. 425-81.100.

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American Flow Systems, Inc.: *See*—
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American Home Products Corporation: *See*—
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Ames, Irving; Anacker, Wilhelm; Grebe, Kurt R.; and Kircher, Charles J., to International Business Machines Corporation. Contact technique for electrical circuitry. 4,316,200, Cl. 357-5.000.

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Ushida, Yoshihisa; Amimoto, Yoshikatu; Toyota, Akinori; and Kashiwa, Norio, 4,315,874, Cl. 264-5.000.

AMP Incorporated: *See*—
Hughes, Donald W. K.; and Myers, Ronald W., 4,315,664, Cl. 339-176.00M.
Olsson, Billy E., 4,315,663, Cl. 339-97.00P.
Whiteman, Robert N., Jr., 4,316,067, Cl. 200-291.000.

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Kovacs, Ferenc; Andor, Akos; and Palagyi, Tivadar, 4,315,915, Cl. 424-143.000.
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Aoyama, Takahiko, to Nagoya University. Method of stabilizing operation of a hybrid spark chamber. 4,316,089, Cl. 250-385.000.
Arakawa, Seiji; Seki, Tomio; Matsuoka, Hidekazu; Harada, Hatsunori; and Ninomiya, Michinari, to Arakawa, Seiji. Pharmaceutical compositions useful as cellular immunopotentiator and antitumor agent and process for production thereof. 4,315,914, Cl. 424-89.000.
Arcand, Leo H. Blasting mat. 4,315,463, Cl. 102-303.000.
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Fava, Ronald A., 4,315,841, Cl. 260-23.70M.
Arenhold, Knut. Mudguard flaps for motor vehicles. 4,315,634, Cl. 280-154.50R.
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Sleeth, Rhule B.; Theiler, Richard F.; and Rendek, Robert B., 4,315,948, Cl. 426-266.000.
Arnaud, Robert: *See*—
Corbier, Robert; and Arnaud, Robert, 4,316,088, Cl. 250-338.000.
Arndt, Friedrich: *See*—
Boroschewski, Gerhard; and Arndt, Friedrich, 4,315,769, Cl. 71-111.000.
Arnold Industries, Inc.: *See*—
Blackstone, George H., 4,315,534, Cl. 144-194.000.
Arnoldt, Peter J., to Ductmate Industries, Inc. Apparatus for positioning and securing components of a workpiece. 4,316,072, Cl. 219-86.240.
Arora, Mulk A., to Sprague Electric Company. Intermittent AC etching of aluminum foil. 4,315,806, Cl. 204-129.400.
Arseneau, Roger E.: *See*—
Del Medico, Anthony P.; and Arseneau, Roger E., 4,316,257, Cl. 364-527.000.
Arthur D. Little, Inc.: *See*—
Prior, William; and Lindstrom, Richard S., 4,315,967, Cl. 428-285.000.
ASA S.A.: *See*—
Matas Gabalda, Carlos, 4,315,397, Cl. 57-58.490.
Asada, Kazuyoshi: *See*—
Hideshima, Keiji; Koyanagi, Haruo; Suda, Hiroharu; Sawano, Hirokazu; Takaki, Masaoki; Yamanaka, Kunio; Yasuda, Isao; and Asada, Kazuyoshi, 4,316,260, Cl. 364-900.000.
Asahi Seimitsu Kabushiki Kaisha: *See*—
Kotani, Sadahiko; and Gibu, Yoshitaka, 4,315,371, Cl. 33-1.00M.
Asai, Mitsuko: *See*—
Higashide, Eiji; Asai, Mitsuko; and Hasegawa, Tory, 4,315,989, Cl. 435-253.000.
ASEA Aktiebolag: *See*—
Adolfsson, Morgan; and Brogardh, Torgny, 4,316,141, Cl. 324-96.000.
Ash, Earl M. Car washing implement. 4,315,342, Cl. 15-121.000.
Ashland Oil, Inc.: *See*—
McChesney, John M.; and Landers, Perry E., 4,315,889, Cl. 422-7.000.
Ateliers des Charmilles S.A.: *See*—
Bonga, Benno I., 4,316,071, Cl. 219-69.00R.
Athearn, Lee F.; and Morrissey, William J., to Medtronic, Inc. Electrochemical cell with protected electrical feedthrough. 4,315,974, Cl. 429-181.000.
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Atlantic Richfield Company: *See*—
Taylor, Paul D.; and Mocella, Michael T., 4,315,896, Cl. 423-54.000.
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Toole, Monte M.; and Champagne, Robert B., 4,315,479, Cl. 118-726.000.
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Avco Corporation: *See*—
Exley, John T.; Kuintzle, Charles, Jr.; and Tate, David L., 4,315,714, Cl. 415-207.000.
Suplinskas, Raymond J.; and Henze, Thomas W., 4,315,968, Cl. 428-367.000.
Avesani, Luigi: *See*—
Torre, Giancarlo D.; and Avesani, Luigi, 4,315,470, Cl. 112-121.150.
Avtec Industries, Inc.: *See*—
Helwig, William F., Jr., 4,316,229, Cl. 361-42.000.
Baatz, Gunther; Conrad, Klaus-Dieter; and Riemhofer, Franz, to Metzeler Schaum GmbH. Method for the manufacture of composite foam materials. 4,315,996, Cl. 521-54.000.
Bacchetta, Enzo: *See*—
Vidotto, Graziano; Sellan, Febo; Bacchetta, Enzo; Mainardi, Sandro; and Benussi, Giovanni, 4,315,843, Cl. 260-29.6PT.
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Baker International Corporation: *See*—
Monauni, Christian K.; and Littleford, Sidney J., 4,315,544, Cl. 166-214.000.
Baker, Kenneth R.; and DeVault, Robert T., to Maritec Corporation. Non jamming reversible jet nozzle. 4,315,749, Cl. 440-42.000.
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Bange, Gunter: *See*—
Korber, Joachim; Bange, Gunter; Poll, Walter; Kaltenbach, Volker Bensberg; and Pittroff, Hans, 4,316,175, Cl. 340-57.000.
Baralle, Roger M.; Compere, Marcel A.; Pfaff, Maurice E.; and Goumont, Claude G., to Eastman Kodak Company. Photographic emulsions and elements capable of forming direct-positive images. 4,315,986, Cl. 430-411.000.
Barbe', Pier C.: *See*—
Scata', Umberto; Luciani, Luciano; and Barbe', Pier C., 4,315,835, Cl. 252-429.00B.
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Barwise, Robert D., to Robil Company. Angle control mechanism for grapple. 4,315,652, Cl. 294-86.00R.
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Hamprecht, Gerhard; and Wuerzer, Bruno, 4,315,766, Cl. 71-88.000.
Hamprecht, Gerhard; Acker, Rolf-Dieter; and Wuerzer, Bruno, 4,316,014, Cl. 544-7.000.
Hamprecht, Gerhard; Acker, Rolf-Dieter; and Wuerzer, Bruno, 4,316,015, Cl. 544-7.000.
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Kempter, Fritz E.; Schupp, Eberhard; and Gulbins, Erich, 4,315,840, Cl. 260-18.0TN.
Kummer, Rudolf; Weiss, Franz-Josef; Schneider, Heinz-Walter; and Taglieber, Volker, 4,316,047, Cl. 560-206.000.
Merger, Franz; Hutmacher, Hans-Martin; and Hagen, Helmut, 4,315,869, Cl. 260-465.200.
Plath, Peter; Wuerzer, Bruno; and Rohr, Wolfgang, 4,316,039, Cl. 548-362.000.
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Reissenweber, Gernot, 4,316,020, Cl. 544-105.000.
Scharwaechter, Peter; Gutsche, Klaus; Kohlmann, Wilhelm; Kroemer, Gerd, deceased; Kroemer, Norma, legal representative; Kroemer, Helmut, legal representative; and Kroemer, Maria M., legal representative, 4,315,931, Cl. 424-251.000.
Schefczik, Ernst, 4,315,855, Cl. 260-155.000.
Zeidler, Georg; Dehnert, Johannes; Hansen, Guenter; and Riedel, Guenther, 4,315,756, Cl. 44-59.000.
BASF Wyandotte Corporation: *See*—
Login, Robert B.; and Newkirk, David D., 4,315,847, Cl. 260-45.7PH.
Login, Robert B.; and Newkirk, David D., 4,315,969, Cl. 428-395.000.
Basile, Rocco F., to Thomas & Betts Corporation. Optical fiber cleaving apparatus. 4,315,368, Cl. 30-124.000.
Battle, Daniel S. Flood protection container for vehicles. 4,315,535, Cl. 150-11.000.
Baumann, Hans; and Oberlinner, Andreas, to BASF Aktiengesellschaft. 7,7'-Diamino derivatives of 2,2'-spirodibenzopyranes. 4,316,027, Cl. 546-15.000.

Baumann, Heinz, to Sulzer Brothers Limited. Weaving machine having means for ventilating a weft supply means. 4,315,529, Cl. 139-1.00C.
Bawarshi, Rima: *See—*
Hussain, Anwar A.; Hirai, Shinichiro; and Bawarshi, Rima, 4,315,925, Cl. 424-239.000.
Bayer Aktiengesellschaft: *See—*
Hagenmaier, Hans-Paul; Konig, Wilfried; Zahner, Hans; Fiedler, Hans-Peter; Dehler, Wolfgang; Keckeisen, Adelinde; Holst, Hartwig; and Zoebelein, Gerhard, 4,315,922, Cl. 424-181.000.
Knipp, Ulrich; Ganster, Otto; and Sahler, Gerd, 4,315,536, Cl. 152-330.00R.
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Adolph, Erich; Bayrak, Unal; and Stecker, Walter, 4,316,138, Cl. 323-364.000.
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Krieter, Georg-Heinz; and Mauthe, Gerhard, 4,316,051, Cl. 174-11.00R.
Merki, Josef; Stankowski, Hans-Werner; and Stockli, Franz, 4,316,111, Cl. 310-218.000.
Beal, George W.; Grant, James R., Jr.; and Hanloser, Kurt J., to United Technologies Corporation. Afterburner flameholder construction. 4,315,401, Cl. 60-261.000.
Beatrice Foods Co.: *See—*
Harrison, David E., 4,315,338, Cl. 4-236.000.
Bechtel, Wolf D.: *See—*
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Plath, Peter; Rohr, Wolfgang; Wuerzer, Bruno; and Becker, Rainer, 4,316,040, Cl. 548-377.000.
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Cassidy, Frederick; and Moore, Richard W., 4,315,941, Cl. 424-269.000.
Beffa, Fabio: *See—*
Puntener, Alois; and Beffa, Fabio, 4,315,854, Cl. 260-145.00A.
Behrendt, Paul. Casket carrier. 4,315,354, Cl. 27-27.000.
Belfield, Willis J.: *See—*
Levine, Benjamin; and Belfield, Willis J., 4,315,612, Cl. 248-538.000.
Bell & Howell Corporation: *See—*
Jacobs, John H., 4,316,196, Cl. 346-1.100.
Bell, Malcolm G.: *See—*
Elliott, John; Bell, Malcolm G.; and Lovatt, William J., 4,315,737, Cl. 432-241.000.
Bell Telephone Laboratories, Incorporated: *See—*
Bobilin, Richard T.; and Howson, Robert D., 4,316,285, Cl. 370-105.000.
Howson, Robert D., 4,316,284, Cl. 370-105.000.
Belltown, Ltd.: *See—*
Rupp, Anthony P.; Intrieri, Salvatore, Jr.; and Walkley, Arthur H., IV, 4,315,780, Cl. 134-7.000.
Ben-Dror, Jonathan: *See—*
Vardi, Isaih; Kimchi, Yigal; and Ben-Dror, Jonathan, 4,315,411, Cl. 62-112.000.
Ben-Moyal, Zohar: *See—*
Fridlender, Bertold; Ben-Moyal, Zohar; Olshevsky, Udi; and Tirosh, Regine, 4,315,907, Cl. 424-1.000.
Bender, Hans: *See—*
Rao, Chatty; and Bender, Hans, 4,315,972, Cl. 428-542.000.
Bending Products, Inc.: *See—*
McGuire, Samuel B., 4,315,423, Cl. 72-466.000.
Bendix Corporation, The: *See—*
Acoraci, Joseph H., 4,316,192, Cl. 343-100.0SA.
Hanisko, John C. P., 4,316,155, Cl. 331-18.000.
Sawatari, Takeo; Keating, Patrick N.; Steinberg, Ronald F.; and Mueller, Rolf K., 4,316,191, Cl. 343-16.00R.
Benkmann, Christian, to Linde Aktiengesellschaft. Adsorption process producing chronologically constant amount of a residual gas. 4,315,759, Cl. 55-18.000.
Benko, Pal: *See—*
Hajos, Gyorgy; Messmer, Andras; Benko, Pal; Petocz, Lujza; Gorog, Peter; and Kasoczky, Ibolya, 4,316,022, Cl. 544-184.000.
Bens, Everett M.; and Fletcher, Aaron N., to United States of America, Navy. Process for producing an electronically conductive oxidizer material. 4,315,905, Cl. 423-592.000.
Benussi, Giovanni: *See—*
Vidotto, Graziano; Sellan, Febo; Bacchetta, Enzo; Mainardi, Sandro; and Benussi, Giovanni, 4,315,843, Cl. 260-29.6PT.
Berger, Jean L., to Thomson-CSF. Digitally programmable filter using electrical charge transfer. 4,316,258, Cl. 364-602.000.
Bergfeld, Manfred; Zengel, Hans-Georg; and Praetorius, Heinz, to Akzona Incorporated. Process for the preparation of 2-mercaptobenzothiazole. 4,316,031, Cl. 546-175.000.
Bergmark, Lars M., to F S Elteknik AB. Earth ground assembly comprising a driving point, a driving rod, and a continuous conductor wire. 4,316,050, Cl. 174-7.000.
Bergwerksverband GmbH: *See—*
Renner, Kurt; Langer, Ernst; and Eisenhut, Werner, 4,315,804, Cl. 202-263.000.
Bernardi, Richard T., to EMI Limited. CT Scanner. 4,316,091, Cl. 250-445.00T.
Bernson, Albert, Jr. Closure assembly. 4,315,577, Cl. 220-323.000.
Berol Kemi A.B.: *See—*
Hellsten, Karl M. E.; Johansson, Inger G.; and Karlsson, Birgit T. G., 4,315,755, Cl. 44-51.000.
Berry, Milton E.: *See—*
Odle, Robert R.; Berry, Milton E.; Brunson, William W.; Burson, William R.; Cofer, Daniel B.; and Richards, Roy, 4,315,775, Cl. 75-76.000.
Bestobell Mobrey Limited: *See—*
Palmer, Stuart B.; and Primavesi, Gregory J., 4,316,183, Cl. 340-621.000.
Beta Manufacturing Corp.: *See—*
Cass, Louis G.; Poleschuk, Nicholas; and Purdy, Samuel, 4,316,239, Cl. 362-155.000.
Bettenhausen, Larry A., to Minnesota Mining & Manufacturing Company. Tape mandrel. 4,315,608, Cl. 242-68.000.
Beveridge, Harold N. Electrostatic electroacoustic transducer. 4,316,062, Cl. 179-111.00R.
Bhangu, Jagnandan K.; Fry, Peter; and Hustler, David, to Rolls-Royce Limited. Perforate laminated material and combustion chambers made therefrom. 4,315,406, Cl. 60-754.000.
Biancardi, Robert P. Apparatus and method for automatically watering vegetation. 4,315,599, Cl. 239-10.000.
Bifok AB: *See—*
Ruzicka, Jaromir; and Hansen, Elo H., 4,315,754, Cl. 23-230.00R.
Bigall, Klaus-Dieter: *See—*
Rosler, Helmut; Irmer, Heimbert U.; and Bigall, Klaus-Dieter, 4,316,104, Cl. 307-308.000.
bij de Leij, Jan D. Method and apparatus for degasing, during transportation, a confined volume of liquid to be measured. 4,315,760, Cl. 55-46.000.
Bitterli, Peter, to Sandoz Ltd. Oximino-imino-isoindoline metal complexes useful as pigments. 4,316,032, Cl. 548-109.000.
Black & Decker Inc.: *See—*
Horne, David, 4,315,370, Cl. 30-386.000.
Black, John W., to Pemco-Kalamazoo, Inc. Rotary ball lock. 4,315,727, Cl. 425-563.000.
Blackstone, George H., to Arnold Industries, Inc. Wood splitter. 4,315,534, Cl. 144-194.000.
Blair, Charles M., Jr., to Magna Corporation. Method of recovering petroleum from a subterranean reservoir incorporating an acylated polyether polyol. 4,315,545, Cl. 166-274.000.
Blaupunkt-Werke GmbH: *See—*
Hansen, Jens; and Schafer, Thomas, 4,316,224, Cl. 360-72.200.
Blazek, William S., to TRW Inc. Method of making a mold. 4,315,537, Cl. 164-27.000.
Bliss & Laughlin: *See—*
Godwin, Robert H.; and Collignon, Herbert E., 4,315,613, Cl. 248-406.000.
Bliss, Timothy R.; and Canepa, Richard T. Fire detection system. 4,316,179, Cl. 340-538.000.
Blochl, Hanns: *See—*
Schnall, Gunther; Aldenhoven, Klaus; and Blochl, Hanns, 4,315,736, Cl. 432-59.000.
Blossey, Erich C.: *See—*
Neckers, Douglas C.; Blossey, Erich C.; and Schaap, A. Paul, 4,315,998, Cl. 525-332.000.
Bobilin, Richard T.; and Howson, Robert D., to Bell Telephone Laboratories, Incorporated. Framing circuit for digital receiver. 4,316,285, Cl. 370-105.000.
Bobillon, Jean-Paul, to Institut de Recherches de la Siderurgie Francaise. Process to continuously determine the profile of a charge fed into a blast furnace. 4,315,771, Cl. 75-41.000.
Boden, Richard M., to International Flavors & Fragrances Inc. Flavoring with mixture of acetyl diisobutylenes. 4,315,911, Cl. 424-48.000.
Boden, Richard M., to International Flavors & Fragrances Inc. Flavoring with dioxolanes. 4,315,952, Cl. 426-536.000.
Bodendorf, Warren J., to Texon Inc. Decay resistant sheet material with retained flexibility. 4,315,798, Cl. 162-161.000.
Bodnar, Janos: *See—*
Lugosi, Gyorgy; Simay, Antal; Bodnar, Janos; Turcsan, Istvan; Jelinek, Istvan; Somfai, Eva; and Simandi, Laszlo, 4,315,861, Cl. 260-340.90R.
Boeddeker, David R.; and Tenner, Wayne V., to Wenger Corporation. Storage cart for music stands. 4,315,633, Cl. 280-79.300.
Boeder, Charles W., to Minnesota Mining and Manufacturing Company. Two-part, anaerobically-curing compositions. 4,316,000, Cl. 526-301.000.
Boehringer Ingelheim Gmbh: *See—*
Schneider, Claus; Weber, Karl-Heinz; Walther, Gerhard; Boke, Karin; and Bechtel, Wolf D., 4,315,938, Cl. 424-267.000.
Boeing Company, The: *See—*
Cooper, Michael G., 4,316,252, Cl. 364-428.000.
Jones, Philip; and Storey, Moorfield, Jr., 4,316,193, Cl. 343-112.00D.
Tyer, Robert C.; Fitch, Robert E.; and Tucker, Gordon H., 4,315,468, Cl. 110-101.0CF.
Boerigter, Milton E., to Fleetwood Furniture Company. Adjustable table. 4,315,466, Cl. 108-147.000.
Bogomolov, Vladislav M.: *See—*
Morozov, Viktor N.; Gimpelson, Ilya A.; and Bogomolov, Vladislav M., 4,315,429, Cl. 75-84.000.
Boileau, Sylvie L.; Lecolier, Serge L.; and Raynal, Serge F., to Societe Nationale des Poudres et Explosifs. Anionic polymerization of heterocyclic monomers with alkali metal amide hydroxylated compound initiator. 4,316,001, Cl. 528-14.000.

Boke, Karin: *See*—
Schneider, Claus; Weber, Karl-Heinz; Walther, Gerhard; Boke, Karin; and Bechtel, Wolf D., 4,315,938, Cl. 424-267.000.

Bolick, Martha E., to Kimberly-Clark Corporation. Self-centering multiple use garment suspension system. 4,315,508, Cl. 128-289.000.

Bolton, Theodore S.: *See*—
Lang, Richard D.; and Bolton, Theodore S., 4,315,457, Cl. 98-40.00C.

Bom, Cornelis J. G.: *See*—
van der Lely, Ary; and Bom, Cornelis J. G., 4,315,418, Cl. 64-28.00R.

Bonga, Benno I., to Ateliers des Charmilles S.A. EDM Apparatus with tool changer. 4,316,071, Cl. 219-69.00R.

Booth, Frederick C.; Frantom, Richard L.; and Thomas, Rudy V., to Allied Corporation. Passive seat belt system. 4,315,639, Cl. 280-803.000.

Booty, Donald A.; and Weisburg, David, to Kidde Consumer Durables Corp. Light fixture and elevator therefor. 4,316,238, Cl. 362-147.000.

Borden, Walter S. Tamper tip for railroad tie tamping machines. 4,315,464, Cl. 104-10.000.

Boroschewski, Gerhard; and Arndt, Friedrich, to Schering AG. Herbicidaldiurethanes and their use. 4,315,769, Cl. 71-111.000.

Borow, Maxwell. Food cutting and grasping implement. 4,315,369, Cl. 30-257.000.

Borzym, John J. Cam operated cutoff machine. 4,315,449, Cl. 83-319.000.

Bosch-Siemens Hausgerate GmbH: *See*—
Reichl, Ernst, 4,315,741, Cl. 433-82.000.

Bottcher, Hugo, to J. H. Benecke GmbH. Method of producing a bond between two surfaces. 4,315,792, Cl. 156-306.600.

Bottenberg, William R.; and Chagnon, Mark S., to Ferrofluidics Corporation. Low-vapor-pressure ferrofluids and method of making same. 4,315,827, Cl. 252-62.510.

Bottka, Nicholas; and Hills, Marian E., to United States of America, Navy. Two color narrow bandwidth detector. 4,316,206, Cl. 357-30.000.

Bouchard, Andre C.; and English, George J., to GTE Products Corporation. Photoflash lamp with loose powder composition and method of making. 4,315,733, Cl. 431-362.000.

Bouge, Gilbert; Jacques, Roland; Poisson, Regis; and Seigneurin, Laurent, to Rhone-Poulenc Industries. Spheroidal alumina particulates having bifold porosity and process for their preparation. 4,315,839, Cl. 252-448.000.

Bousquet, Francois: *See*—
Mamourian, Armand; and Bousquet, Francois, 4,315,899, Cl. 423-321.00R.

Boyer, Winston. Arc sputtering method of making colloidal magnesium sol and apparatus therefor. 4,315,833, Cl. 252-314.000.

Boyle, Timothy J.: *See*—
Mahawili, Imad; and Boyle, Timothy J., 4,315,523, Cl. 137-486.000.

Bradley, John J.: *See*—
Luu, Duc; deRivet, Philippe-Hubert; Bradley, John J.; and Franklin, Benjamin S., 4,316,245, Cl. 364-200.000.

Bradley, Ronald W.; Carl, David G.; and Keating, Bernard L., to Owens-Illinois, Inc. Method of strengthening glass containers and articles so made. 4,315,573, Cl. 215-12.00R.

Bramer, Henry C.; and Shapiro, Edward, to Pittsburgh Environmental and Energy Systems, Inc. Method and apparatus for purification of exhaust gases. 4,315,895, Cl. 422-171.000.

Brandenberger, Helmuth-Hugo: *See*—
Busca, Giovanni; and Brandenberger, Helmuth-Hugo, 4,316,153, Cl. 331-3.000.

Brandin, Ivar, to Stal Refrigeration AB. Method and apparatus for making ice blocks. 4,315,410, Cl. 62-66.000.

Brandon, Ronald E. Friction coefficient measurement from a moving vehicle. 4,315,426, Cl. 73-9.000.

Brandts Buys, Ludwig D. G.; Godard, Pierre M. J. L.; Goossens, Henri C.; Mignard, Joseph J.; Wertz, Jean-Luc H. M. F. G.; and Mercier, Jean-Pierre, to Wyns-Bristol S.A. Peintures; and N.V. Trimetal Paint Co. Process for coating mineral, organic or metallic microscopic or macroscopic substrates. 4,315,959, Cl. 427-214.000.

Breitenfellenr, Franz: *See*—
Buxbaum, Lothar; Habermeier, Jurgen; Breitenfellenr, Franz; and Kainmuller, Thomas, 4,315,849, Cl. 260-45.75B.

Bremer, Noel J.; and Dria, Dennis E., to Standard Oil Company (Ohio). Preparation of maleic anhydride. 4,315,864, Cl. 260-346.750.

Breuers, Theo P. C.; and Hanegraaf, Johannes P., to Oce-Nederland B.V. Apparatus for copying from plural sheetlike originals. 4,315,687, Cl. 355-75.000.

Bricot, Claude: *See*—
Antoine, Robert; Bricot, Claude; and Robin, Gerard, 4,315,723, Cl. 425-110.000.

Brines, Marjorie J.; and Rabatin, Jacob G., to General Electric Company. Rare earth oxyhalide phosphor and x-ray image converters utilizing same. 4,315,979, Cl. 430-6.000.

Bristol-Myers Company: *See*—
Iimura, Seiji; Okumura, Jun; and Naito, Takayuki, 4,316,024, Cl. 544-359.000.
Walker, Derek; Silvestri, Herbert H.; Sapino, Chester; and Johnson, David A., 4,316,016, Cl. 544-16.000.
Walker, Derek; Silvestri, Herbert H.; Sapino, Chester; and Johnson, David A., 4,316,017, Cl. 544-026.000.

British Gas Corporation: *See*—
Creed, Malcolm R.; and Gilmour, Ronald B., 4,315,407, Cl. 62-53.000.

British Petroleum Company Limited, The: *See*—
Thomas, John L., 4,315,818, Cl. 210-242.300.

Brock, Josef; and Surkamp, Paul, to Maschinenfabrik Carl Zangs Aktiengesellschaft. Control for a dobby mechanism. 4,315,530, Cl. 139-76.000.

Brodman, Bruce W.; Devine, Michael P.; and Schwartz, Stuart, to United States of America, Army. Propellant charge with reduced muzzle smoke and flash characteristics. 4,315,785, Cl. 149-19.800.

Broers, Alec N.; Cuomo, Jerome J.; Laibowitz, Robert B.; and Molzen, Walter W., Jr., to International Business Machines Corporation. Sub-100A range line width pattern fabrication. 4,316,093, Cl. 250-492.100.

Brogardh, Torgny: *See*—
Adolfsson, Morgan; and Brogardh, Torgny, 4,316,141, Cl. 324-96.000.

Brooker, Steven A. Chemical injector. 4,315,601, Cl. 239-142.000.

Brooks, Derek J.: *See*—
French, Albert G.; and Brooks, Derek J., 4,315,658, Cl. 299-43.000.

Brooks, Ray G., to Malco Products, Inc. Method of reinforcing a duct. 4,315,361, Cl. 29-432.100.

Brown, Ray M. Fluid distribution apparatus. 4,315,522, Cl. 137-355.170.

Brown & Williamson Tobacco Corporation: *See*—
Mills, Luther J., III, 4,315,515, Cl. 131-303.000.

Bruckenstein, Stanley; and Kosek, John A., to United States of America, Interior. Electrochemical apparatus for simultaneously monitoring two gases. 4,315,753, Cl. 23-232.00E.

Brugirard, Jean-Louis. Syringes for injecting pasty products. 4,315,743, Cl. 433-90.000.

Brunson, William W.: *See*—
Odle, Robert R.; Berry, Milton E.; Brunson, William W.; Burson, William R.; Cofer, Daniel B.; and Richards, Roy, 4,315,775, Cl. 75-76.000.

Buchel, Karl H.: *See*—
Reiser, Wolf; Draber, Wilfried; Buchel, Karl H.; Lurssen, Klaus; Frohberger, Paul-Ernst; and Paul, Volker, 4,315,764, Cl. 71-76.000.

Buckman, Charles E., to Wrightman Enterprises, Inc. Golf ball position marker and ground repair tool. 4,315,624, Cl. 273-32.00A.

Buecheler, Paul, to Sandoz Ltd. Process for the synthesis of azobenzene compounds having a cyano group in one or both of the ortho positions of the diazo component radical. 4,315,857, Cl. 260-207.100.

Bukowski, Ronald G.: *See*—
Mann, Alexander B.; Kraeling, John B., Jr.; and Bukowski, Ronald G., 4,315,820, Cl. 210-408.000.

Bulgarsko Radio: *See*—
Kanchev, Peter K., 4,316,280, Cl. 369-250.000.

Bulova Watch Company, Inc.: *See*—
Koehler, Dale R.; and Zupfer, Jerrald A., 4,316,276, Cl. 368-70.000.

Bunch, Jesse C. Lenticulated lens. 4,315,671, Cl. 350-451.000.

Burnham, Robert D.: *See*—
Scifres, Donald R.; Streifer, William; and Burnham, Robert D., 4,316,156, Cl. 372-50.000.

Burroughs Wellcome Co.: *See*—
Morrison, Robert W., Jr.; Mallory, William R.; and Styles, Virgil L., 4,315,932, Cl. 424-251.000.
Schaeffer, Howard J.; DeMiranda, Paulo M. S.; Elion, Gertrude B.; and Hitchings, George H., 4,315,920, Cl. 424-180.000.

Burson, William R.: *See*—
Odle, Robert R.; Berry, Milton E.; Brunson, William W.; Burson, William R.; Cofer, Daniel B.; and Richards, Roy, 4,315,775, Cl. 75-76.000.

Burton, Robert S., III, to Occidental Oil Shale, Inc. Gas seal for an in situ oil shale retort and method of forming thermal barrier. 4,315,657, Cl. 299-2.000.

Busca, Giovanni; and Brandenberger, Helmuth-Hugo, to Ebauches, S.A. Passive masers having oscillator and cavity control loops. 4,316,153, Cl. 331-3.000.

Buschmann, Erwin C.: *See*—
Aftergut, Siegfried; Buschmann, Erwin C.; and Lao, Kenneth Q., 4,315,668, Cl. 350-343.000.

Butler, James R., to Fairchild Camera and Instrument Corp. Input stage using junction field effect transistors for biasing. 4,316,102, Cl. 307-296.00R.

Buxbaum, Lothar; Habermeier, Jurgen; Breitenfellenr, Franz; and Kainmuller, Thomas, to Ciba-Geigy Corporation. Flame-resistant plastics moulding material. 4,315,849, Cl. 260-45.75B.

Byrd, Gary D.: *See*—
Kubacak, Johnny L.; and Byrd, Gary D., 4,315,602, Cl. 239-163.000.

C-R-O, Inc.: *See*—
Balfanz, Fredrick J., 4,316,076, Cl. 219-124.340.

Cahen, David: *See*—
Manassen, Joost; Hodes, Gary; and Cahen, David, 4,315,973, Cl. 429-111.000.

Cain, Steve B. Spring tensioning device and method. 4,315,739, Cl. 433-21.000.

Callahan, James L.: *See*—
Miller, Arthur F.; Callahan, James L.; and Shaw, Wilfrid G., 4,315,838, Cl. 252-448.000.

Callerame, Joseph: *See*—
Wilson, David T.; Tancrell, Roger H.; and Callerame, Joseph, 4,316,115, Cl. 310-327.000.

Calvano, Michele, to Aertermica Nicotra S.p.A. Apparatus for the construction of fan wheels of the double-aspirator type. 4,315,357, Cl. 29-23.500.

Campenon Bernard Cetra & Constructions Metalliques: *See—*
Moreau, Philippe J.; and Monsterleet, Jacques G. A., 4,315,385, Cl. 52-80.000.
Camphausen, Fred H.: *See—*
McLean, James D.; Alpers, Frederick C.; Lanning, George R.; and Camphausen, Fred H., 4,315,609, Cl. 244-3.140.
Canadian Liquid Air Ltd.: *See—*
Savard, Guy; and Lee, Robert G. H., 4,315,774, Cl. 75-74.000.
Canadian Patents & Development Ltd.: *See—*
Dosi, Mahendra K.; James, Douglas J.; and Pasternak, Anthony W., 4,316,157, Cl. 372-59.000.
Cancasci, Maurice V., Jr., to Cincinnati Milacron Inc. Multiple font display control. 4,316,188, Cl. 340-735.000.
Canepa, Richard T.: *See—*
Bliss, Timothy R.; and Canepa, Richard T., 4,316,179, Cl. 340-538.000.
Canon Kabushiki Kaisha: *See—*
Hosoe, Kazuya; Shinoda, Nobuhiko; Fukuda, Minoru; Kawabata, Takashi; Kinoshita, Takao; and Ito, Tadashi, 4,315,674, Cl. 354-25.000.
Inuzuka, Tsuneki; Murakami, Koichi; Kurita, Kenji; and Sakamaki, Hisashi, 4,315,685, Cl. 355-14.00R.
Nakamura, Zenzo, 4,315,679, Cl. 354-128.000.
Sugiura, Susumu; and Sato, Tadashi, 4,315,684, Cl. 355-14.00R.
Cantatore, Giuseppe; and Cassandrini, Paolo, to Chimosa Chimica Organica S.p.A. Piperidine compounds. 4,316,025, Cl. 544-364.000.
Capetola, Robert J.; and McGuire, John L., to Ortho Pharmaceutical Corporation. Analgesic composition. 4,315,936, Cl. 424-260.000.
Carl, David G.: *See—*
Bradley, Ronald W.; Carl, David G.; and Keating, Bernard L., 4,315,573, Cl. 215-12.00R.
Carl Zeiss-Stiftung: *See—*
Muller, Ortwin; and Stopar, Victor, 4,315,672, Cl. 351-13.000.
Carle & Montanari S.p.A: *See—*
Palmieri, Angelo, 4,315,794, Cl. 156-504.000.
Carling, Helge: *See—*
Moe, Per J.; Carling, Helge; and Eriksen, Leif H., 4,315,702, Cl. 405-170.000.
Carlson, Richard H., to Texas Instruments Incorporated. Elastic hair dryer having selectively variable air output temperature. 4,316,077, Cl. 219-370.000.
Carmichael, William E.; and Rodacker, Wayne. Truck hub and method of banding same. 4,315,360, Cl. 29-159.030.
Caron, Paul R.: *See—*
Gallant, Stuart L.; Caron, Paul R.; Dunn, Stanley M.; Palmer, Walter E.; Schmitt, Ernest G.; and Taddeo, Michael, 4,316,249, Cl. 364-417.000.
Carrier Corporation: *See—*
Lang, Richard D.; and Bolton, Theodore S., 4,315,457, Cl. 98-40.00C.
Carroll, Charles B., to RCA Corporation. Baseplate assembly for flat panel display devices. 4,316,117, Cl. 313-422.000.
Carstab Corporation: *See—*
Kugele, Thomas G., 4,315,850, Cl. 260-45.75S.
Carter, Sidney T., to A-T-O Inc. Doctor blade for labeling machine. 4,315,478, Cl. 118-262.000.
Casey, Russell A. Muffler for internal combustion engine. 4,315,559, Cl. 181-265.000.
Cass, Louis G.; Poleschuk, Nicholas; and Purdy, Samuel, to Beta Manufacturing Corp. Trunk lamp assembly. 4,316,239, Cl. 362-155.000.
Cassandrini, Paolo: *See—*
Cantatore, Giuseppe; and Cassandrini, Paolo, 4,316,025, Cl. 544-364.000.
Cassat, Robert; and Guillot, Gerard, to Rhone-Poulenc Industries. Molding compositions comprised of polyimide/N-vinylpyrrolidone prepolymer and epoxy resin. 4,316,002, Cl. 528-107.000.
Cassidy, Frederick; and Moore, Richard W., to Beecham Group Limited. Urazole analogs of prostaglandin derivatives. 4,315,941, Cl. 424-269.000.
Castellani, Eugene E.; Croll, Ian M.; Pfeiffer, Aloysius T.; and Romankiw, Lubomyr T., to International Business Machines Corporation. Fine-line circuit fabrication and photoresist application therefor. 4,315,985, Cl. 430-314.000.
Castle, Richard M., to RCA Corporation. Speed deviation detector for servo controlled disc mastering turntable. 4,316,143, Cl. 324-161.000.
Catanese, Carmen A.: *See—*
Hockings, Eric F.; and Catanese, Carmen A., 4,316,126, Cl. 315-375.000.
Caterpillar Tractor Co.: *See—*
McReynolds, Charles P., 4,315,646, Cl. 292-68.000.
Catron, Woodrow. Knot tying tool. 4,315,445, Cl. 81-5.10R.
Cave, James P.: *See—*
Witt, Enrique R.; Humphrey, William J.; and Cave, James P., 4,315,823, Cl. 210-605.000.
Celanese Corporation: *See—*
Witt, Enrique R.; Humphrey, William J.; and Cave, James P., 4,315,823, Cl. 210-605.000.
Centre National de Transfusion Sanguine: *See—*
Matte, Claude, 4,315,593, Cl. 233-21.000.
Cerberus Ltd.: *See—*
Niederost, Werner A., 4,315,594, Cl. 340-693.000.
Chafetz, Harry: *See—*
Schlicht, Raymond C.; Levine, Stephen A.; and Chafetz, Harry, 4,315,826, Cl. 252-46.400.
Chagnon, Mark S.: *See—*
Bottenberg, William R.; and Chagnon, Mark S., 4,315,827, Cl. 252-62.510.
Champagne, Robert B.: *See—*
Toole, Monte M.; and Champagne, Robert B., 4,315,479, Cl. 118-726.000.
Champion International Corporation: *See—*
Jaeschke, Harold R., 4,315,569, Cl. 206-45.310.
Charles K. Kelley and Sons Inc.: *See—*
Kelley, Charles K.; and Jones, William W., 4,315,704, Cl. 406-12.000.
Chato, John C.; and Crowley, Joseph M. Single phase electrohydrodynamic pump. 4,316,233, Cl. 361-233.000.
Chem-Lawn Corporation: *See—*
Rhoades, Edward J.; Rosenberger, Edwin C.; and Waker, Jerome A., 4,315,600, Cl. 239-74.000.
Chemische Werke Huels, Aktiengesellschaft: *See—*
Hanssle, Peter, 4,315,867, Cl. 260-439.00R.
Cheng, Paul J.; and Mills, King L., to Phillips Petroleum Company. Process for producing carbon black. 4,315,901, Cl. 423-455.000.
Chevron Research Company: *See—*
Ostrander, William J., 4,316,267, Cl. 367-68.000.
Ostrander, William J., 4,316,268, Cl. 367-68.000.
Chew, William M.: *See—*
English, William D.; and Chew, William M., 4,315,786, Cl. 149-22.000.
Chiba, Kouetsu: *See—*
Tanaka, Hirotoshi; Kawajiri, Yoshiki; Chiba, Kouetsu; Hori, Ryoichi; and Itoh, Kiyoo, 4,316,265, Cl. 365-203.000.
Chicago Bridge & Iron Company: *See—*
Schmitt, Richard L.; Lai, Ban-Yen; and Husain, Matloob, 4,315,404, Cl. 60-690.000.
Chimosa Chimica Organica S.p.A.: *See—*
Cantatore, Giuseppe; and Cassandrini, Paolo, 4,316,025, Cl. 544-364.000.
Chin, Albert K., to Fogarty, Thomas J. Endarterectomy apparatus. 4,315,511, Cl. 128-305.000.
Ching, Ta-Yen, to General Electric Company. Alkoxysilylbenzotriazoles. 4,316,033, Cl. 548-110.000.
Chinoin Gyogyszer RT: *See—*
Lugosi, Gyorgy; Simay, Antal; Bodnar, Janos; Turcsan, Istvan; Jelinek, Istvan; Somfai, Eva; and Simandi, Laszlo, 4,315,861, Cl. 260-340.90R.
Chisso Corporation: *See—*
Nakajima, Takayoshi; and Tomioka, Susumu, 4,315,881, Cl. 264-171.000.
Chitil, Manfred; and Mantey, Paul G., to Klockner-Werke AG. Process for steel production and converter for carrying out the process. 4,315,772, Cl. 75-52.000.
Choyce, David P. Autoclavable anterior chamber implant. 4,315,337, Cl. 3-13.000.
Christ KG: *See—*
Meyenschein, Richard, 4,315,604, Cl. 241-82.500.
Christensen, Anne V., to Sandoz Ltd. Organic compounds. 4,315,934, Cl. 424-256.000.
Christensen, Roy M., to RCA Corporation. Sound field transmission system surrounding a listener. 4,316,058, Cl. 179-1.0GQ.
Christiansen, Gerald E.: *See—*
Messick, Walker; and Christiansen, Gerald E., 4,315,525, Cl. 137-625.400.
Christou, Aristos; and Davey, John E., to United States of America, Navy. Low-barrier-height epitaxial Ge-GaAs mixer diode. 4,316,201, Cl. 357-15.000.
Chszaniecki, Siegfried, to Hermann Berstorff Maschinenbau GmbH. Double screw extruder transmission. 4,315,440, Cl. 74-665.00G.
Church, Peter K., to Wymore, Max L.; and Leisure Products Corporation, a part interest to each. Water based window glass and chrome cleaner composition. 4,315,828, Cl. 252-153.000.
Ciba-Geigy Corporation: *See—*
Buxbaum, Lothar; Habermeier, Jurgen; Breitenfellenr, Franz; and Kainmuller, Thomas, 4,315,849, Cl. 260-45.75B.
Dexter, Martin; and Winter, Roland A. E., 4,315,848, Cl. 260-45.8NT.
Felder, Louis; Kirchmayr, Rudolf; and Husler, Rinaldo, 4,315,807, Cl. 204-159.180.
Gschwend, Heinz W., 4,315,926, Cl. 424-244.000.
Nikles, Erwin, 4,315,859, Cl. 260-243.300.
Petitpierre, Jean C., 4,316,036, Cl. 548-153.000.
Puntener, Alois; and Beffa, Fabio, 4,315,854, Cl. 260-145.00A.
Wurster, Rudolf F.; and Merz, Jurg, 4,316,005, Cl. 528-256.000.
Cibolo Manufacturing, Inc.: *See—*
Kubacak, Johnny L.; and Byrd, Gary D., 4,315,602, Cl. 239-163.000.
Cincinnati Milacron Inc.: *See—*
Cancasci, Maurice V., Jr., 4,316,188, Cl. 340-735.000.
Cities Service Company: *See—*
Gulick, Jonathan F., 4,315,709, Cl. 414-22.000.
Clare, David H. Periodical support and retrieval device. 4,315,572, Cl. 211-45.000.
Clarke, Garry W. Portal building structures. 4,315,386, Cl. 52-93.000.
Climenhage, David C., to Du Pont Canada Inc. Treatment of nitrogenous wastes. 4,315,821, Cl. 210-605.000.
Close, Desmond: *See—*
Pidcock, Anthony; Close, Desmond; and To Kwan, William C., 4,315,405, Cl. 60-752.000.

Coal Industry (Patents) Limited: *See—*
French, Albert G.; and Brooks, Derek J., 4,315,658, Cl. 299-43.000.

Cofer, Daniel B.: *See—*
Odle, Robert R.; Berry, Milton E.; Brunson, William W.; Burson, William R.; Cofer, Daniel B.; and Richards, Roy, 4,315,775, Cl. 75-76.000.

Cohen, Daniel: *See—*
Volluet, Gerard; and Cohen, Daniel, 4,316,162, Cl. 333-201.000.

Coile, Bob F.: *See—*
Coile, Larry R.; and Coile, Bob F., 4,315,481, Cl. 119-21.000.

Coile, Larry R.; and Coile, Bob F. Breeder house system. 4,315,481, Cl. 119-21.000.

Colangelo, Dominick; Pfeifer, George F.; and Schumacher, Gary B., to General Electric Company. Wide input range, transient-immune regulated flyback switching power supply. 4,316,242, Cl. 363-21.000.

Cole, Henry W., to Marconi Company Limited, The. Secondary surveillance radar. 4,316,190, Cl. 343-6.50R.

Cole-Parmer Instrument Company: *See—*
Hogan, Lawrence R., 4,315,718, Cl. 417-477.000.

Cole, Rossa W.; and Zoll, August H., to Curtiss-Wright Corporation. Method of and apparatus for preheating pressurized fluidized bed combustor and clean-up subsystem of a gas turbine power plant. 4,315,400, Cl. 60-39.020.

Collignon, Herbert E.: *See—*
Godwin, Robert H.; and Collignon, Herbert E., 4,315,613, Cl. 248-406.000.

Cominco Ltd.: *See—*
Laurie, Gordon H.; Seymour, Theodore J.; Sakauye, Randall T.; and Marlow, John V., 4,315,356, Cl. 29-6.100.

Commissariat a l'Energie Atomique: *See—*
Devin, Bernard; Durand, Jean-Paul; and Guillemot, Michel, 4,315,498, Cl. 126-422.000.
Morin, Bruno; and Thiery, Daniel, 4,315,831, Cl. 252-628.000.

Commonwealth of Australia, Department of Productivity, The: *See—*
Waldron, John M.; Nott, Frederick J.; Harrison, Laurence C.; Johnson, Graham D.; and Green, Malcolm D., 4,316,112, Cl. 310-258.000.

Compagnie Honeywell Bull: *See—*
Luu, Duc; deRivet, Philippe-Hubert; Bradley, John J.; and Franklin, Benjamin S., 4,316,245, Cl. 364-200.000.

Compere, Marcel A.: *See—*
Baralle, Roger M.; Compere, Marcel A.; Pfaff, Maurice E.; and Goumont, Claude G., 4,315,986, Cl. 430-411.000.

Conoco Inc.: *See—*
Starks, Charles M., 4,315,995, Cl. 521-33.000.

Conrad, Klaus-Dieter: *See—*
Baatz, Gunther; Conrad, Klaus-Dieter; and Riemhofer, Franz, 4,315,996, Cl. 521-54.000.

Conrad, Rene A. Positive drive system. 4,315,751, Cl. 474-154.000.

Conte, Alfred L., to Union Carbide Corporation. Coated active anodes. 4,315,976, Cl. 429-194.000.

Continental Gummi-Werke Aktiengesellschaft: *See—*
Menell, Hans, 4,315,788, Cl. 156-85.000.

Cooper, Charles H.: *See—*
Cooper, Stephen R.; and Cooper, Charles H., 4,315,482, Cl. 119-29.000.

Cooper, John C., to RCA Corporation. Tilted unitary degaussing coil arrangement. 4,316,119, Cl. 315-8.000.

Cooper Medical Devices Corporation: *See—*
Kihn, Harry, 4,315,510, Cl. 128-303.100.

Cooper, Michael G., to Boeing Company, The. Apparatus for determining the position of an aircraft with respect to the runway. 4,316,252, Cl. 364-428.000.

Cooper, Stephen R.; and Cooper, Charles H. Three-dimensional phonetic alphabet. 4,315,482, Cl. 119-29.000.

Coplan, Myron J.; and Lopatin, George, to Albany International Corp. Methods of fabricating sorbent-cored textile yarns. 4,315,877, Cl. 264-45.900.

Copyer Co., Ltd.: *See—*
Ishikawa, Shozo; Masubuchi, Shoji; and Ohkawa, Shigeki, 4,315,982, Cl. 430-59.000.

Corbier, Robert; and Arnaud, Robert, to I.R. Tec. Process and device for measuring by infrared thermometry the temperature of a wire, bar or tube, or a metal. 4,316,088, Cl. 250-338.000.

Cordani, Eugene J.; and Vorwerk, Frederick E., to ACF Industries, Incorporated. Constant contact side bearing for articulated rail cars. 4,315,465, Cl. 105-4.00R.

Corden, Brian J., to New England Medical Center, Inc. Intravenously administrable iron supplement. 4,315,942, Cl. 424-295.000.

Cordner, Michael A., to Sundstrand Corporation. Aircraft generator starter-drive. 4,315,442, Cl. 74-687.000.

Corning Glass Works: *See—*
Hagy, Henry E.; and Martin, Francis W., 4,315,991, Cl. 501-26.000.

Costa, Lawrence C., to Halcon SD Group, Inc., The. Catalytic process for the production of aryl carboxylates. 4,316,045, Cl. 560-130.000.

Costa, Lawrence C., to Halcon SD Group, Inc., The. Process for the preparation of aryl carboxylates. 4,316,046, Cl. 560-130.000.

Cotman, Ronald N.; and Lanese, Gustino J., to General Electric Company. Circular fluorescent lamp unit. 4,316,120, Cl. 315-58.000.

Coulter, Mary F. L., heir: *See—*
Likens, Jonas S., deceased; Ford, Ruby L., heir; Coulter, Mary F. L., heir; Coulter, Pauline L., heir; and Filson, Lucille L., heir, 4,315,916, Cl. 424-145.000.

Coulter, Pauline L., heir: *See—*
Likens, Jonas S., deceased; Ford, Ruby L., heir; Coulter, Mary F. L., heir; Coulter, Pauline L., heir; and Filson, Lucille L., heir, 4,315,916, Cl. 424-145.000.

Coupling Systems, Inc.: *See—*
Rieffle, Paul F., 4,316,053, Cl. 174-84.00S.

Cragoe, Edward J., Jr.; Stokker, Gerald E.; and Gould, Norman P., to Merck & Co., Inc. [(5,6,9a-Substituted-3-oxo-1,2,9,9a-tetrahydro-3H-fluoren-7-yl)oxy]alkanoic and cycloalkanoic acids and their analogs, esters, salts and derivatives. 4,316,043, Cl. 560-53.000.

Cramer, Glen G., to Madison Creamery, Inc. Filled cream, butter-like product made therefrom and method of manufacturing them. 4,315,955, Cl. 426-585.000.

Crandall, Norman C.; and French, Robert C., to Shiley, Inc. Tracheostomy tube with disposable inner cannula. 4,315,505, Cl. 128-200.260.

Creager, John E.: *See—*
Sutton, Stephen J.; Creager, John E.; and Gelenius, Robert B., 4,316,174, Cl. 340-52.00R.

Credelle, Thomas L.: *See—*
Anderson, Charles H.; Credelle, Thomas L.; and Siekanowicz, Wieslaw W., 4,316,118, Cl. 313-422.000.

Creed, Malcolm R.; and Gilmour, Ronald B., to British Gas Corporation. Gas storage and transmission systems. 4,315,407, Cl. 62-53.000.

Croll, Ian M.: *See—*
Castellani, Eugene E.; Croll, Ian M.; Pfeiffer, Aloysius T.; and Romankiw, Lubomyr T., 4,315,985, Cl. 430-314.000.

Crook, John A. Baby bottle feeder. 4,315,654, Cl. 297-188.000.

Crosby, John; and Milner, John A., to Imperial Chemical Industries Limited. Adducts of furoxan and vicinal diketones. 4,316,034, Cl. 548-124.000.

Crosby, Philip S., to Tektronix, Inc. Phase locked loop including phase detector system controlled by enable pulses. 4,316,150, Cl. 331-1.00A.

Crowley, Joseph M.: *See—*
Chato, John C.; and Crowley, Joseph M., 4,316,233, Cl. 361-233.000.

Cuomo, Jerome J.: *See—*
Broers, Alec N.; Cuomo, Jerome J.; Laibowitz, Robert B.; and Molzen, Walter W., Jr., 4,316,093, Cl. 250-492.100.

Curtiss-Wright Corporation: *See—*
Cole, Rossa W.; and Zoll, August H., 4,315,400, Cl. 60-39.020.

Czebe, Laszlo: *See—*
Takacs, Istvan; Kerey, Gyorgy; Illes, Janos; Rudolf, Peter; Gere, Pal; Czebe, Laszlo; and Neszmelyi, Erzsebet, 4,315,923, Cl. 424-183.000.

Dalgleish, Roger L.: *See—*
Dolamore, Earl W., 4,315,586, Cl. 226-141.000.

Daly, Richard T., to Quantronix Corporation. Method and apparatus for laser irradiating semiconductor material. 4,316,074, Cl. 219-121.00L.

Danfoss A/S: *See—*
Madigan, Stephen M., 4,315,598, Cl. 237-70.000.

Danne, Friedrich A., to "Octropa" B.V. Internationale Octrooi Maatschappij. Sleeve for gramophone records. 4,315,571, Cl. 206-312.000.

Dante, Mark F.; and Allen, Roy A., to Shell Oil Company. Epoxy resin curing agents. 4,316,003, Cl. 528-111.000.

Dany, Franz-Josef: *See—*
Adam, Wilhelm; Ulrich, Hannsjorg; Dany, Franz-Josef; and Kalteyer, Gerd, 4,315,961, Cl. 427-385.500.
Staendeke, Horst; Adam, Wilhelm; Dany, Franz-Josef; and Kandler, Joachim, 4,315,897, Cl. 423-274.000.

Darlington, William B.; and DuBois, Donald W., to PPG Industries, Inc. Solid polymer electrolyte chlor-alkali process. 4,315,805, Cl. 204-98.000.

Darnall, John C., to Times Mirror Company, The. Flexible printing plate and attachments therefor. 4,315,886, Cl. 264-318.000.

Data General Corporation: *See—*
Grondalski, David S., 4,316,244, Cl. 364-200.000.
Retter, Charles T., 4,316,248, Cl. 364-200.000.

Data Motion Incorporated: *See—*
Seitz, Alan F., 4,315,585, Cl. 226-74.000.

Davey, John E.: *See—*
Christou, Aristos; and Davey, John E., 4,316,201, Cl. 357-15.000.

Davidson, Maxwell W., to Maxwell Davidson Limited. Method of processing seeds or cereal to accelerate natural germination. 4,315,380, Cl. 47-58.000.

Davy International Aktiengesellschaft: *See—*
Lell, Rainer; Al-Muddarris, Ghazi R.; and Pachaly, Reinhard, 4,315,904, Cl. 423-574.00R.

Day, Lawrence, to Spitfire Tool & Machine, Co. Inc. Inner gear drive for abrading machines. 4,315,383, Cl. 51-118.000.

DBX, Inc.: *See—*
Adams, Robert W.; and Tyler, Leslie B., 4,316,060, Cl. 179-1.00D.
Talbot, Daniel B., 4,316,107, Cl. 307-492.000.

de Backer's Compressoren B.V.: *See—*
de Backer, Pieter A., 4,315,716, Cl. 417-27.000.

de Backer, Pieter A., to de Backer's Compressoren B.V. Suction control valve. 4,315,716, Cl. 417-27.000.

Deckman, Harry W.: *See—*
Peiffer, Dennis G.; and Deckman, Harry W., 4,315,958, Cl. 427-214.000.

Decor Innovations Limited: *See—*
Rattee, Ian D.; and Lewis, Edward J., 4,315,790, Cl. 156-230.000.

Deere & Company: *See—*
Oka, Ken K.; and Kulak, John, 4,315,396, Cl. 56-320.100.

DeGeeter, Melvin J.; and McCall, John M., to Upjohn Company, The. Animal feed and process. 4,315,930, Cl. 424-249.000.

Dehler, Wolfgang: *See—*
Hagenmaier, Hans-Paul; Konig, Wilfried; Zahner, Hans; Fiedler, Hans-Peter; Dehler, Wolfgang; Keckeisen, Adelinde; Holst, Hartwig; and Zoebelein, Gerhard, 4,315,922, Cl. 424-181.000.

Dehnert, Johannes: *See—*
Zeidler, Georg; Dehnert, Johannes; Hansen, Guenter; and Riedel, Guenther, 4,315,756, Cl. 44-59.000.

Del Medico, Anthony P.; and Arseneau, Roger E., to Siemens Gammasonics, Inc. Dynamic modification of spatial distortion correction capabilities of scintillation camera. 4,316,257, Cl. 364-527.000.

Deloddere, Gabriel: *See—*
Verwimp, Jozef K. P.; and Deloddere, Gabriel, 4,316,124, Cl. 315-205.000.

DeMiranda, Paulo M. S.: *See—*
Schaeffer, Howard J.; DeMiranda, Paulo M. S.; Elion, Gertrude B.; and Hitchings, George H., 4,315,920, Cl. 424-180.000.

Demoute, Jean-Pierre: *See—*
Martel, Jacques; Tessier, Jean; Demoute, Jean-Pierre; and Teche, Andre, 4,315,868, Cl. 260-465.00D.

Demuth, Robert, to Rieter Machine Works, Ltd. Crush roll arrangement for a card web. 4,315,346, Cl. 19-65.0CR.

Dennison Manufacturing Company: *See—*
Jodrey, Robert M.; and Young, Kenneth, 4,315,795, Cl. 156-542.000.
Ritter, Don D.; Patterson, Edwin A.; and Pigg, Henry M., 4,315,587, Cl. 227-67.000.

deRivet, Philippe-Hubert: *See—*
Luu, Duc; deRivet, Philippe-Hubert; Bradley, John J.; and Franklin, Benjamin S., 4,316,245, Cl. 364-200.000.

De Santis, Charles M.; and Wills, John R., to United States of America, Army. Hemispherical coverage microstrip antenna. 4,316,194, Cl. 343-700.0MS.

de Simone, Vittorio: *See—*
Torre, Giancarlo D.; and de Simone, Vittorio, 4,315,471, Cl. 112-153.000.

de Somer, Jean-Marie, to Mundi, Carta. Collating device for flat goods, particularly cards. 4,315,710, Cl. 414-47.000.

DeVault, Robert T.: *See—*
Baker, Kenneth R.; and DeVault, Robert T., 4,315,749, Cl. 440-42.000.

Devin, Bernard; Durand, Jean-Paul; and Guillemot, Michel, to Commissariat a l'Energie Atomique. Solar collector. 4,315,498, Cl. 126-422.000.

Devine, Michael P.: *See—*
Brodman, Bruce W.; Devine, Michael P.; and Schwartz, Stuart, 4,315,785, Cl. 149-19.800.

Devor, Donald P.: *See—*
Pastor, Ricardo C.; and Devor, Donald P., 4,315,832, Cl. 252-301.40R.

Devoucoux, Pierre: *See—*
Pouderoux, Pierre; Marsault, Jean-Jacques; Devoucoux, Pierre; and Gerard, Roger, 4,315,528, Cl. 138-106.000.

Dexter, Martin; and Winter, Roland A. E., to Ciba-Geigy Corporation. 2-[2-Hydroxy-3,5-di-(α,α-dimethylbenzyl)-phenyl]-2H-benzotriazole and stabilized compositions. 4,315,848, Cl. 260-45.8NT.

Diesel Kiki Co., Ltd.: *See—*
Nakajima, Takashi; and Ohno, Iwao, 4,315,603, Cl. 239-533.300.

Diffracto Ltd.: *See—*
Pryor, Timothy R., 4,315,688, Cl. 356-73.000.

Dilbert, Meredith N., to Phillips Petroleum Company. Method for producing carbon black. 4,315,902, Cl. 423-456.000.

DiPlacido, Michele. Masonary saw jig. 4,315,494, Cl. 125-35.000.

Djurner, Jan K.: *See—*
Kubat, Josef; Rigdahl, Hans M.; and Djurner, Jan K., 4,315,887, Cl. 264-328.160.

DM Systems, Inc.: *See—*
Drennan, Dennis B.; Maylahn, Donald J.; and Schleicher, Thomas R., 4,315,504, Cl. 128-149.000.

Dockins, Roy R., Jr. Mechanical tubing drain. 4,315,542, Cl. 166-117.700.

Dolamore, Earl W., to Dalgleish, Roger L., a part interest. Double-eccentric locking means. 4,315,586, Cl. 226-141.000.

Dolokemia Vegyipari Szovetkezet Kozos Vallalat: *See—*
Kovacs, Ferenc; Andor, Akos; and Palagyi, Tivadar, 4,315,915, Cl. 424-143.000.

Donnelly Mirrors, Inc.: *See—*
Stegenga, Philip D.; and VandenBrink, Wayne, 4,315,614, Cl. 248-479.000.

Donnenberg, Leon; and Draxler, Helmut J., to TMI Sales Corporation. Expansion tanks for pressurized fluids and diaphragms therefor. 4,315,527, Cl. 138-30.000.

Dosi, Mahendra K.; James, Douglas J.; and Pasternak, Anthony W., to Canadian Patents & Development-Ltd. Gas recirculation system for carbon dioxide lasers. 4,316,157, Cl. 372-59.000.

Doub, Leonard; Haskell, Theodore H.; Mich, Thomas F.; and Schweiss, Dietrich, to Warner-Lambert Company. Antibacterial amide compounds. 4,315,858, Cl. 260-239.100.

Dow Chemical Co., The: *See—*
Havens, Carl B., 4,315,963, Cl. 428-35.000.
McEwen, Gerald K., 4,316,006, Cl. 528-398.000.

Dow Corning Corporation: *See—*
McGee, James B., 4,315,970, Cl. 428-412.000.

Doyle, William D., to Sperry Corporation. Transfer and replication arrangement for magnetic bubble memory devices. 4,316,263, Cl. 365-12.000.

Draber, Wilfried: *See—*
Reiser, Wolf; Draber, Wilfried; Buchel, Karl H.; Lurssen, Klaus; Frohberger, Paul-Ernst; and Paul, Volker, 4,315,764, Cl. 71-76.000.

Drackett Company, The: *See—*
Ludwig, Clifford J., Jr., 4,315,578, Cl. 220-366.000.

Drake, Stanley: *See—*
Steffek, Leonard J.; and Drake, Stanley, 4,316,195, Cl. 343-758.000.

Draxler, Helmut J.: *See—*
Donnenberg, Leon; and Draxler, Helmut J., 4,315,527, Cl. 138-30.000.

Dreier, Ernst, to Fritz Gerauf Aktiengesellschaft Bernina-Nahmaschinenfabrik. Thread take-off device of a sewing machine. 4,315,474, Cl. 112-242.000.

Drennan, Dennis B.; Maylahn, Donald J.; and Schleicher, Thomas R., to DM Systems, Inc. Elbow suspension device. 4,315,504, Cl. 128-149.000.

Dresser Industries, Inc.: *See—*
Hopkinson, Eric C., 4,316,086, Cl. 250-262.000.
Winsor, Jack O., 4,315,552, Cl. 173-159.000.

Drewes, William; and Levine, Martin, to Drewes, William. Method and apparatus for selective cell destruction. 4,315,514, Cl. 128-653.000.

Dria, Dennis E.: *See—*
Bremer, Noel J.; and Dria, Dennis E., 4,315,864, Cl. 260-346.750.

Du Pont Canada Inc.: *See—*
Climenhage, David C., 4,315,821, Cl. 210-605.000.

DuBois, Donald W.: *See—*
Darlington, William B.; and DuBois, Donald W., 4,315,805, Cl. 204-98.000.

Ductmate Industries, Inc.: *See—*
Arnoldt, Peter J., 4,316,072, Cl. 219-86.240.

Duddy, Joseph C.; Malaspina, Francis P.; and Martini, William J., to Exide Corporation. Method of preparing a battery paste containing fibrous polyfluoroethylene for use in the plates of a lead-acid storage battery. 4,315,829, Cl. 252-182.100.

Dudley, Carl K.: *See—*
Purdy, James A.; and Dudley, Carl K., 4,316,186, Cl. 340-648.000.

Dueren, Gottfried: *See—*
Ries, Guenter; Juengst, Klaus-Peter; Foerster, Siegfried; Graf, Franz; Lehmann, Wolfgang; Unkelbach, Karl-Heinz; and Dueren, Gottfried, 4,315,816, Cl. 209-223.00A.

Dunn, Stanley M.: *See—*
Gallant, Stuart L.; Caron, Paul R.; Dunn, Stanley M.; Palmer, Walter E.; Schmitt, Ernest G.; and Taddeo, Michael, 4,316,249, Cl. 364-417.000.

Du Pont de Nemours, E. I., and Company: *See—*
Moore, Earl P., Jr., 4,315,856, Cl. 260-192.000.
Wolf, Anthony D., 4,315,767, Cl. 71-91.000.

Durand, Jean-Paul: *See—*
Devin, Bernard; Durand, Jean-Paul; and Guillemot, Michel, 4,315,498, Cl. 126-422.000.

Durette, Philippe L., to Merck & Co. Inc. Immunologically active dipeptidyl 2-amino-1,2-dideoxy-D-glucose derivatives and methods of preparation. 4,315,913, Cl. 424-88.000.

Dvorin, Stuart R. Automatic hydroponic garden. 4,315,381, Cl. 47-59.000.

Dydyk, Michael, to Motorola Inc. Impedance transforming hybrid ring. 4,316,160, Cl. 333-120.000.

Dziewulski, Ted: *See—*
Kay, Arthur H.; and Dziewulski, Ted, 4,315,382, Cl. 47-66.000.

Eagles, Geoffrey J., to GEC Mechanical Handling Limited. Transfer systems. 4,315,533, Cl. 141-387.000.

Early, Judson H.: *See—*
Off, Joseph W. A.; and Early, Judson H., 4,315,793, Cl. 156-443.000.

Eastman Kodak Company: *See—*
Baralle, Roger M.; Compere, Marcel A.; Pfaff, Maurice E.; and Goumont, Claude G., 4,315,986, Cl. 430-411.000.
Hartman, Susan E., 4,315,978, Cl. 430-4.000.
Hunt, Keith, 4,316,013, Cl. 542-445.000.

Eastman, Marcus R., to United States of America, Army. Pulse width modulation (PWM) with jewel pivot accelerometer. 4,315,434, Cl. 73-517.00B.

Eastman Technology, Inc.: *See—*
Lemke, James U.; and French, William W., 4,316,227, Cl. 360-121.000.

Eaton Corporation: *See—*
Anderson, Patrick J.; and Kenny, Andrew A., 4,315,521, Cl. 137-85.000.
Gee, Thomas A.; and Tremba, Joseph A., 4,316,176, Cl. 340-58.000.
Geppert, Steven, 4,316,132, Cl. 318-723.000.
Hansen, James E.; and Rutchik, Walter L., 4,316,230, Cl. 361-114.000.
Luy, William R., 4,316,172, Cl. 338-280.000.

Ebauches, S.A.: *See—*
Busca, Giovanni; and Brandenberger, Helmuth-Hugo, 4,316,153, Cl. 331-3.000.

Echols, John B. Knockdown catamaran. 4,315,475, Cl. 114-61.000.

Eck, Werner: *See—*
Hoffmann, Jurgen; and Eck, Werner, 4,315,524, Cl. 137-514.300.

Edelman, Seymour; and Payne, Beverly F., to United States of America, Army. Polymer film accelerometer. 4,315,433, Cl. 73-517.00R.

EGYT Gyogyszervegyeszeti Gyar: *See—*
Hajos, Gyorgy; Messmer, Andras; Benko, Pal; Petocz, Lujza; Gorog, Peter; and Kasoczky, Ibolya, 4,316,022, Cl. 544-184.000.

Eichenauer, Larry. Display device for greeting cards. 4,315,376, Cl. 40-124.400.

Eidetic Images, Inc.: *See—*
Haines, Kenneth A., 4,315,665, Cl. 350-3.610.

Eisenhut, Werner: *See—*
Renner, Kurt; Langer, Ernst; and Eisenhut, Werner, 4,315,804, Cl. 202-263.000.

Elco Corporation: *See—*
Wigby, Jon, 4,315,365, Cl. 29-739.000.

Electric Power Research Institute, Inc.: *See—*
Levin, Harry P.; and Levin, Michael M., 4,316,254, Cl. 364-481.000.

Electro-Biology, Inc.: *See—*
Ryaby, John P.; and Pilla, Arthur A., 4,315,503, Cl. 128-1.500.

Electro-Mechanical Products: *See—*
Tann, David, 4,316,145, Cl. 324-208.000.

Eli Lilly and Company; Paget, Charles J.; and Wikel, James H. Substituted 1-sulfonylbenzimidazoles. 4,316,021, Cl. 544-139.000.

Eli Lilly and Company: *See—*
Sheets, Francis E., 4,315,990, Cl. 435-291.000.

Elion, Gertrude B.: *See—*
Schaeffer, Howard J.; DeMiranda, Paulo M. S.; Elion, Gertrude B.; and Hitchings, George H., 4,315,920, Cl. 424-180.000.

Elliott, John; Bell, Malcolm G.; and Lovatt, William J., to Acme Marls Limited. Base for a kiln car. 4,315,737, Cl. 432-241.000.

Elsohly, Mahmoud A.; and Turner, Carlton E., to University of Mississippi, The. Process for preparing cannabichromene. 4,315,862, Cl. 260-345.200.

Elsworth, Robert M., to Elsworth, Robert M. Apparatus for filling caulking tubes with improved linkage means. 4,315,532, Cl. 141-183.000.

Eltra Corporation: *See—*
Purdy, James A.; and Dudley, Carl K., 4,316,186, Cl. 340-648.000.

EMI Limited: *See—*
Bernardi, Richard T., 4,316,091, Cl. 250-445.00T.

Emil Pester GmbH Verpackungsmaschinen: *See—*
Noack, Fritz, 4,315,394, Cl. 53-553.000.

Endicott, Donald L., Jr.; Walton, James M.; and Wernli, Robert L., to United States of America, Navy. Coupling for quick attachment to plate-like structure. 4,315,651, Cl. 294-83.00R.

Endler, James F.: *See—*
Pitkjaan, Elam; and Endler, James F., 4,316,240, Cl. 362-267.000.

Endo, Akira: *See—*
Matsumura, Akira; Endo, Akira; and Sekine, Kenji, 4,316,173, Cl. 340-32.000.

Endo, Itaru, to Rhythm Watch Company Limited. Electronic clock movement assembly. 4,316,277, Cl. 368-76.000.

Endo, Teruo: *See—*
Takahashi, Kotei; Endo, Teruo; Kawaguchi, Masayuki; and Sakamoto, Kenichi, 4,315,698, Cl. 403-59.000.

Endter, Paul A., to McDonnell Douglas Corporation. System for reading or recording indicia on a flexible disc. 4,316,278, Cl. 369-100.000.

English, George J.: *See—*
Bouchard, Andre C.; and English, George J., 4,315,733, Cl. 431-362.000.

English, Roy L. Bi-wing flying disc. 4,315,629, Cl. 273-425.000.

English, William D.; and Chew, William M., to TRW Inc. Solid propellant hydrogen generator. 4,315,786, Cl. 149-22.000.

Erickson, Roger D., to Honeywell Inc. Electrographic recording. 4,316,198, Cl. 346-150.000.

Eriksen, Leif H.: *See—*
Moe, Per J.; Carling, Helge; and Eriksen, Leif H., 4,315,702, Cl. 405-170.000.

Erkfritz, Donald S., to General Electric Company. Holder assembly for an indexable insert for use in a cutting tool. 4,315,706, Cl. 407-101.000.

Ermanski, Albert G.; and Wright, David M., to Wright Line Inc. Easel-style suspension binder. 4,315,696, Cl. 402-70.000.

Errichiello, Dominic R. Integrally molded covers and spines for loose-leaf books. 4,315,642, Cl. 281-33.000.

Esposito, Patsy. Obstruction traversing hand truck. 4,315,635, Cl. 280-655.000.

Essler, Richard, to Siemens Aktiengesellschaft. Electromagnetic relay with snap-in yoke. 4,316,164, Cl. 335-202.000.

Etcheparre, Bernard: *See—*
Etcheparre, Jean; and Etcheparre, Bernard, 4,315,437, Cl. 74-89.220.

Etcheparre, Jean; and Etcheparre, Bernard, to Societe Lectra Systemes, S.A. Device for driving and displacing a beam resting upon guide rails, and one or more carriages attached to the beam. 4,315,437, Cl. 74-89.220.

Evans, Gary W., to United States of America, Agriculture. Dietary supplementation with essential metal picolinates. 4,315,927, Cl. 424-245.000.

Evert, Donald A., to Honeywell Inc. Purging and expansion mechanism. 4,316,271, Cl. 367-140.000.

Evrard, Thomas O., to Olin Corporation. Use of aluminum tris(-O-ethyl phosphonate) as an ammonium nitrification compound. 4,315,762, Cl. 71-27.000.

Exide Corporation: *See—*
Duddy, Joseph C.; Malaspina, Francis P.; and Martini, William J., 4,315,829, Cl. 252-182.100.

Exley, John T.; Kuintzle, Charles, Jr.; and Tate, David L., to Avco Corporation. Rotary compressors. 4,315,714, Cl. 415-207.000.

F S Elteknik A `: *See—*
Bergmark, Lars M., 4,316,050, Cl. 174-7.000.

Fahrenholz, Harley D. Double roll rock windrower. 4,315,546, Cl. 171-65.000.

Fairchild Camera and Instrument Corp.: *See—*
Butler, James R., 4,316,102, Cl. 307-296.00R.

Faltin, Hans G. High speed on-line stitcher for signatures and webs. 4,315,588, Cl. 227-81.000.

Farnhill, William M.: *See—*
Parker, Alan; and Farnhill, William M., 4,315,398, Cl. 57-58.950.

Fava, Ronald A., to ARCO Polymers, Inc. Filled molding composition featuring star-block copolymer conjugated diene and vinyl aromatic compound. 4,315,841, Cl. 260-23.70M.

Federal Pacific Electric Company: *See—*
Roy, Nilendu; and Horton, Arnold, 4,316,163, Cl. 335-37.000.

Feistel, Horst, to International Business Machines Corporation. Stream/block cipher crytographic system. 4,316,055, Cl. 178-22.060.

Felder, Louis; Kirchmayr, Rudolf; and Husler, Rinaldo, to Ciba-Geigy Corporation. Sensitizers for photopolymerization. 4,315,807, Cl. 204-159.180.

Felix, Ernst, to Zellweger Uster, Ltd. Method and apparatus for obtaining predeterminable and exact yarn length on cross-wound bobbins. 4,315,607, Cl. 242-36.000.

Fenton, Donald M.; and Vaell, Raoul P., to Union Oil Company of California. Reducing the consumption of anthraquinone disulfonate in stretford solutions. 4,315,903, Cl. 423-573.00R.

Fergg, Berthold; Nitsch, Wilhelm; and Pflugbeil, Mathias, to AGFA-Gevaert Aktiengesellschaft. Exposure controls for photographic copy machines. 4,315,686, Cl. 355-38.000.

Fernbach, James L. Vehicle load supporting arrangement. 4,315,707, Cl. 410-47.000.

Ferrofluidics Corporation: *See—*
Bottenberg, William R.; and Chagnon, Mark S., 4,315,827, Cl. 252-62.510.

Fichtel & Sachs AG: *See—*
Lutz, Manfred, 4,315,649, Cl. 292-201.000.

Fiedler, Hans-Peter: *See—*
Hagenmaier, Hans-Paul; Konig, Wilfried; Zahner, Hans; Fiedler, Hans-Peter; Dehler, Wolfgang; Keckeisen, Adelinde; Holst, Hartwig; and Zoebelein, Gerhard, 4,315,922, Cl. 424-181.000.

Filippi, Richard E.: *See—*
Prentice, Alan L.; and Filippi, Richard E., 4,315,409, Cl. 62-63.000.

Filson, Lucille L.: *See—*
Likens, Jonas S., deceased; Ford, Ruby L., heir; Coulter, Mary F. L., heir; Coulter, Pauline L., heir; and Filson, Lucille L., heir, 4,315,916, Cl. 424-145.000.

Filson, Lucille L., heir: *See—*
Likens, Jonas S., deceased; Ford, Ruby L., heir; Coulter, Mary F. L., heir; Coulter, Pauline L., heir; and Filson, Lucille L., heir, 4,315,916, Cl. 424-145.000.

Firester, Arthur H.: *See—*
Russell, John P.; Firester, Arthur H.; and Gorog, Istvan, 4,316,279, Cl. 369-109.000.

Firth, John R.: *See—*
Perkins, Charles V.; and Firth, John R., 4,315,691, Cl. 356-331.000.

Fishman, Iosif D. Y.: *See—*
Ivanov, Valentin A.; Khodosh, Vladimir A.; Ostrovsky, Igor S.; Shenkman, Mikhail Y.; Koshelev, Jury A.; Vlasov, Sergei N.; Pachulia, Budu P.; and Fishman, Iosif D. Y., 4,315,701, Cl. 405-150.000.

Fitch, Robert E.: *See—*
Tyer, Robert C.; Fitch, Robert E.; and Tucker, Gordon H., 4,315,468, Cl. 110-101.0CF.

Fitness Motivation Institute of America: *See—*
Kinkead, Jordan A., 4,315,372, Cl. 33-148.00F.

Fitzmayer, Louis H., to General Electric Company. Microwave oven excitation system. 4,316,069, Cl. 219-10.55F.

Fleetwood Furniture Company: *See—*
Boerigter, Milton E., 4,315,466, Cl. 108-147.000.

Fleetwood Systems, Inc.: *See—*
Mojden, Wallace W., 4,315,568, Cl. 198-690.000.

Fleischman, George L.: *See—*
Anderson, Robert A.; and Fleischman, George L., 4,315,539, Cl. 165-1.000.

Fletcher, Aaron N.: *See—*
Bens, Everett M.; and Fletcher, Aaron N., 4,315,905, Cl. 423-592.000.

Flexible Steel Lacing Company: *See—*
Pray, Winston C., 4,315,450, Cl. 83-862.000.

Flint, Alan G., to GCA Corporation. Apparatus for handling and treating wafers. 4,315,705, Cl. 406-73.000.

FMC Corportion: *See—*
Lutz, Charles W., 4,315,898, Cl. 423-315.000.

Foerster, Siegfried: *See—*
Ries, Guenter; Juengst, Klaus-Peter; Foerster, Siegfried; Graf, Franz; Lehmann, Wolfgang; Unkelbach, Karl-Heinz; and Dueren, Gottfried, 4,315,816, Cl. 209-223.00A.

Fogarty, Thomas J. Piston extension balloon dilatation catheter apparatus and method. 4,315,512, Cl. 128-344.000.

Fogarty, Thomas J.: *See—*
Chin, Albert K., 4,315,511, Cl. 128-305.000.

Ford Motor Company: *See—*
Baker, Robert R.; and Hartsock, Dale L., 4,315,876, Cl. 264-40.100.

Ford, Ruby L., heir: *See—*
Likens, Jonas S., deceased; Ford, Ruby L., heir; Coulter, Mary F. L., heir; Coulter, Pauline L., heir; and Filson, Lucille L., heir, 4,315,916, Cl. 424-145.000.

Forny, Arnold; Koch, Jakob; Niederer, Hans; and Schmid, Otto, to Gebr. Hoffmann AG. Container having circumferential and longitudinal stiffening corrugations. 4,315,574, Cl. 220-72.000.
Foster Wheeler Energy Corporation: *See*—
McCallister, Robert A., 4,315,893, Cl. 422-109.000.
Fowler, Albert L., to Hughes Aircraft Company. Comparator. 4,316,105, Cl. 307-362.000.
Fox, Ernest D.: *See*—
Mackey, Donald; and Fox, Ernest D., 4,316,211, Cl. 358-10.000.
Franke, Albrecht: *See*—
Frickel, Fritz-Frieder; Franke, Albrecht; Von Philipsborn, Gerda; Mueller, Claus D.; and Lenke, Dieter, 4,315,939, Cl. 424-267.000.
Franklin, Benjamin S.: *See*—
Luu, Duc; deRivet, Philippe-Hubert; Bradley, John J.; and Franklin, Benjamin S., 4,316,245, Cl. 364-200.000.
Frantom, Richard L., to Allied Corporation. Seat belt web guide. 4,315,637, Cl. 280-801.000.
Frantom, Richard L.: *See*—
Booth, Frederick C.; Frantom, Richard L.; and Thomas, Rudy V., 4,315,639, Cl. 280-803.000.
Frascara, Jorge; Jungkind, Walter; Ladan, Carol J.; and Nelson, Thomas M., to University of Alberta, The Governors of the. Alphabetic device. 4,315,748, Cl. 434-159.000.
Freedman, Bernard; Powell, Richard G.; and Smith, Cecil R., Jr., to United States of America, Agriculture. Method of controlling the European corn borer with trewiasine. 4,315,929, Cl. 424-248.540.
Freissmuth, Alfred; Gmohling, Werner; and Rock, Heinrich, to SKW Trostberg Aktiengesellschaft. Desulfurization mixture and process for desulfurizing pig iron. 4,315,773, Cl. 75-58.000.
Freitag, Herbert; and Schnitzius, Klaus, to Stabilus GmbH. Gas spring arrangement operating as an electrical connection. 4,316,098, Cl. 307-119.000.
French, Albert G.; and Brooks, Derek J., to Coal Industry (Patents) Limited. Mining equipment. 4,315,658, Cl. 299-43.000.
French, David M.; Rosborough, J. T. L.; and Swedenberg, Clyde J., to United States of America, Navy. Method for altering the characteristics of polymers. 4,315,830, Cl. 252-182.000.
French, David W.; Heisler, Robert W.; Maldarella, Antonio, Jr.; and Vanhoy, Gilbert W., to Johns-Manville Corporation. Sealing ring for spigot and socket pipe joint. 4,315,630, Cl. 277-207.00A.
French, Robert C.: *See*—
Crandall, Norman C.; and French, Robert C., 4,315,505, Cl. 128-200.260.
French, William W.: *See*—
Lemke, James U.; and French, William W., 4,316,227, Cl. 360-121.000.
Frey, Walter; and Kaiser, Rolf. Bath container for a refrigeration equipment. 4,315,416, Cl. 62-438.000.
Frickel, Fritz-Frieder; Franke, Albrecht; Von Philipsborn, Gerda; Mueller, Claus D.; and Lenke, Dieter, to BASF Aktiengesellschaft. Piperidine derivatives of 4,5-dialkyl-3-hydroxy-pyrrole-2-carboxylic acid esters, pharmaceutical formulations containing these compounds and use in treating cardiac arrhythmias. 4,315,939, Cl. 424-267.000.
Fridlender, Bertold; Ben-Moyal, Zohar; Olshevsky, Udi; and Tirosh, Regine, to Ames-Yissum. Combined heterogeneous specific binding assay. 4,315,907, Cl. 424-1.000.
Fritz Gerauf Aktiengesellschaft Bernina-Nahmaschinenfabrik: *See*—
Dreier, Ernst, 4,315,474, Cl. 112-242.000.
Fritz, John R., to Honeywell Inc. Computer control apparatus. 4,316,082, Cl. 235-146.000.
Frohberger, Paul-Ernst: *See*—
Reiser, Wolf; Draber, Wilfried; Buchel, Karl H.; Lurssen, Klaus; Frohberger, Paul-Ernst; and Paul, Volker, 4,315,764, Cl. 71-76.000.
Fry, Peter: *See*—
Bhangu, Jagnandan K.; Fry, Peter; and Hustler, David, 4,315,406, Cl. 60-754.000.
Fuji Jukogyo Kabushiki Kaisha: *See*—
Nakazato, Eiji, 4,315,640, Cl. 280-808.000.
Fuji Kagakushi Kogyo Co., Ltd.: *See*—
Tokunaga, Yukio; Sugiyama, Kiyoshi; and Seto, Tadao, 4,315,643, Cl. 282-27.500.
Fuji Kasui Engineering Co., Ltd.: *See*—
Senjo, Teizo; and Kobayashi, Makio, 4,315,872, Cl. 261-113.000.
Fuji Photo Film Co., Ltd.: *See*—
Kawamura, Koichi; Katsuyama, Harumi; and Sato, Hideo, 4,315,983, Cl. 430-70.000.
Kimura, Tsutomu, 4,316,261, Cl. 364-900.000.
Fuji Xerox Co., Ltd.: *See*—
Sadamatsu, Shigeru; Yamamoto, Kohichi; and Ohmi, Kazuaki, 4,315,980, Cl. 430-58.000.
Fujii, Masahiko: *See*—
Yoshikumi, Chikao; Fujii, Takayoshi; Fujii, Masahiko; Matsunaga, Kenichi; Oguchi, Yoshiharu; and Niimura, Koichi, 4,315,851, Cl. 260-112.00B.
Fujii, Takayoshi: *See*—
Yoshikumi, Chikao; Fujii, Takayoshi; Fujii, Masahiko; Matsunaga, Kenichi; Oguchi, Yoshiharu; and Niimura, Koichi, 4,315,851, Cl. 260-112.00B.
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,315,921, Cl. 424-180.000.
Fujii, Toru, to Olympus Optical Co., Ltd. Wide-angle zoom lens system. 4,315,669, Cl. 350-426.000.
Fujikura, Makoto: *See*—
Takahashi, Hiroshi; Tsuyama, Koichi; Uozu, Nobuo; and Fujikura, Makoto, 4,315,845, Cl. 260-42.280.
Fujino, Hitoshi, to Alps Electric Co., Ltd. Remote operation device. 4,316,064. Cl. 200-17.00R.
Fujino, Masahiko; and Kitada, Chieko, to Takeda Chemical Industries, Ltd. Polyprenylpeptides and their production. 4,315,853, Cl. 260-112.50R.
Fujisawa Pharmaceutical Co., Ltd.: *See*—
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,316,019, Cl. 544-28.000.
Fujitsu Limited: *See*—
Inagaki, Nobuhiro; Kitamura, Eiichi; and Nainazu, Ryosuke, 4,316,204, Cl. 357-30.000.
Matsumoto, Takashi, 4,316,207, Cl. 357-41.000.
Tohgei, Ryoiku, 4,316,203, Cl. 357-23.000.
Fujiwara, Hideo; Kudo, Mitsuhiro; Tamura, Teizou; Sugishita, Nobuyuki; Shiroishi, Yoshihiro; Kimura, Takeshi; Shinagawa, Kiminari; and Kumasaka, Noriyuki, to Hitachi, Ltd. Magnetic head. 4,316,228, Cl. 360-127.000.
Fukatsu, Yoshiaki: *See*—
Hattori, Katsuhide; Fukatsu, Yoshiaki; and Takahashi, Masao, 4,315,784, Cl. 149-2.000.
Hattori, Katsuhide; Fukatsu, Yoshiaki; and Takahashi, Masao, 4,315,787, Cl. 149-2.000.
Fukuda, Eiichi, to Kabushiki Kaisha Komatsu Seisakusho. Transmission for a hydraulically driven vehicle. 4,315,441, Cl. 74-665.00M.
Fukuda, Minoru: *See*—
Hosoe, Kazuya; Shinoda, Nobuhiko; Fukuda, Minoru; Kawabata, Takashi; Kinoshita, Takao; and Ito, Tadashi, 4,315,674, Cl. 354-25.000.
Fulkerson, David W.; and Smith, Lawrence W. Self-propelled apparatus for setting cemetery markers and the like. 4,315,550, Cl. 173-28.000.
Funfschilling, Peter, to Sandoz Ltd. Substituted carboxyalkoxyaminodihydrobenzophenones. 4,316,042, Cl. 560-27.000.
Furukawa, Toshio: *See*—
Kuchikata, Masuo; Tsuyuki, Hiroshi; Furukawa, Toshio; Nitta, Yoshihiro; and Kuyama, Hiroshi, 4,315,846, Cl. 260-429.900.
Furuta, Harumi: *See*—
Tomoshige, Toru; Furuta, Harumi; Tachi, Akihiro; and Kawamoto, Nobuyuki, 4,315,863, Cl. 260-346.740.
Fussl, Erwin; and Scheibenreif, Karl, to Maerz Ofenbau AG. Process for calcining mineral raw materials in a uniflow regenerative shaft furnace. 4,315,735, Cl. 432-25.000.
G. Siempelkamp GmbH & Co.: *See*—
Ufermann, Werner, 4,315,722, Cl. 425-83.100.
Gabor, Charles; and Spector, George. Percussion aid. 4,315,453, Cl. 84-422.00R.
Gallant, Stuart L.; Caron, Paul R.; Dunn, Stanley M.; Palmer, Walter E.; Schmitt, Ernest G.; and Taddeo, Michael, to Hittman Corporation. Automatic high speed Holter scanning system. 4,316,249, Cl. 364-417.000.
Ganster, Otto: *See*—
Knipp, Ulrich; Ganster, Otto; and Sahler, Gerd, 4,315,536, Cl. 152-330.00R.
Garab, H. Gary: *See*—
Turek, Mitchell C.; and Garab, H. Gary, 4,315,799, Cl. 162-353.000.
Gardner, Conrad O. EGR Valve control signal processing for internal combustion engine. 4,315,492, Cl. 123-571.000.
Garraffa, Jerome, Jr. Water pre-heater of a refrigeration system. 4,315,597, Cl. 237-2.00B.
Gasper, Alton J., to Minnesota Mining and Manufacturing Company. Sealing method using latex-reinforced polyurethane sewer sealing composition. 4,315,703, Cl. 405-264.000.
Gay, Donald L., to United States of America, Army. Video tracker. 4,316,218, Cl. 358-125.000.
Gayst, Stephen; and Maguire, Michael J. Pharmaceutical formulation of guar gum. 4,315,918, Cl. 424-177.000.
GCA Corporation: *See*—
Flint, Alan G., 4,315,705, Cl. 406-73.000.
Gearhart Industries, Inc.: *See*—
Peppers, James M., 4,315,797, Cl. 156-654.000.
Gearhart, Junior A., to Kerr-McGee Refining Corporation. Process for separating bituminous materials and recovering solvent. 4,315,815, Cl. 208-321.000.
Gebr. Hoffmann AG: *See*—
Forny, Arnold; Koch, Jakob; Niederer, Hans; and Schmid, Otto, 4,315,574, Cl. 220-72.000.
GEC Mechanical Handling Limited: *See*—
Eagles, Geoffrey J., 4,315,533, Cl. 141-387.000.
Gee, Thomas A.; and Tremba, Joseph A., to Eaton Corporation. Tire pressure monitor and self check system therefore. 4,316,176, Cl. 340-58.000.
Geisen, Karl: *See*—
Hitzel, Volker; Weyer, Rudi; Geisen, Karl; and Regitz, Gunter, 4,315,940, Cl. 424-267.000.
Gelder, Frank B., to New England Nuclear Corporation. Cold insoluble globulin, its purification and use. 4,315,906, Cl. 424-1.000.
Gelenius, Robert B.: *See*—
Sutton, Stephen J.; Creager, John E.; and Gelenius, Robert B., 4,316,174, Cl. 340-52.00R.
General Electric Company: *See*—
Aftergut, Siegfried; Buschmann, Erwin C.; and Lao, Kenneth Q., 4,315,668, Cl. 350-343.000.
Archer, William R., 4,316,243, Cl. 363-132.000.

Barone, Michael R., 4,315,363, Cl. 29-596.000.
Brines, Marjorie J.; and Rabatin, Jacob G., 4,315,979, Cl. 430-6.000.
Ching, Ta-Yen, 4,316,033, Cl. 548-110.000.
Colangelo, Dominick; Pfeifer, George F.; and Schumacher, Gary B., 4,316,242, Cl. 363-21.000.
Cotman, Ronald N.; and Lanese, Gustino J., 4,316,120, Cl. 315-58.000.
Erkfritz, Donald S., 4,315,706, Cl. 407-101.000.
Fitzmayer, Louis H., 4,316,069, Cl. 219-10.55F.
Graves, James A.; and Reiling, Gilbert H., 4,316,116, Cl. 313-344.000.
Hammer, Edward E.; and Lemmers, Eugene, 4,316,121, Cl. 315-62.000.
Heidrich, Arthur J., 4,315,746, Cl. 434-2.000.
Houston, Douglas E., 4,315,591, Cl. 228-188.000.
Leffingwell, Edward A., 4,315,364, Cl. 29-623.100.
Rabatin, Jacob G., 4,316,092, Cl. 250-483.000.
Swab, John M., 4,316,221, Cl. 358-213.000.
Watrous, Donald L.; and Weischedel, Richard C., 4,316,185, Cl. 340-636.000.
Woodmansee, Donald E., 4,315,757, Cl. 48-71.000.

General Motors Corporation: *See—*
Levijoki, Wayne A., 4,316,144, Cl. 324-174.000.
Sutton, Stephen J.; Creager, John E.; and Gelenius, Robert B., 4,316,174, Cl. 340-52.00R.

Geppert, Steven, to Eaton Corporation. PWM Inverter control and the application thereof within electric vehicles. 4,316,132, Cl. 318-723.000.

Gerard, Roger: *See—*
Pouderoux, Pierre; Marsault, Jean-Jacques; Devoucoux, Pierre; and Gerard, Roger, 4,315,528, Cl. 138-106.000.

Gere, Pal: *See—*
Takacs, Istvan; Kerey, Gyorgy; Illes, Janos; Rudolf, Peter; Gere, Pal; Czebe, Laszlo; and Neszmelyi, Erzsebet, 4,315,923, Cl. 424-183.000.

Gerhard, Helmut, to Westerwalder Eisenwerk Gerhard GmbH. Transport container. 4,315,531, Cl. 141-98.000.

Giannetti, Enzo: *See—*
Albizzati, Enrico; and Giannetti, Enzo, 4,315,836, Cl. 252-429.00B.

Gibu, Yoshitaka: *See—*
Kotani, Sadahiko; and Gibu, Yoshitaka, 4,315,371, Cl. 33-1.00M.

Giebel, Gerhard; and Klein, Rolf, to USM Corporation. Shoe lasting machine. 4,315,341, Cl. 12-10.500.

Gilbert Plastics, Inc.: *See—*
Murphy, Joseph E.; and Piceno, Frank, Jr., 4,315,576, Cl. 220-282.000.

Gilmour, Ronald B.: *See—*
Creed, Malcolm R.; and Gilmour, Ronald B., 4,315,407, Cl. 62-53.000.

Gimpelson, Ilya A.: *See—*
Morozov, Viktor N.; Gimpelson, Ilya A.; and Bogomolov, Vladislav M., 4,315,429, Cl. 73-84.000.

Girard, Edmond; and Rey, Robert, to Messier. Aero-hydraulic generator and a heat recovery installation including such a generator. 4,315,403, Cl. 60-643.000.

Giroux, Richard L.: *See—*
Luers, Thomas J.; and Giroux, Richard L., 4,315,543, Cl. 166-202.000.

Glasl, Johann: *See—*
Schweizer, Dieter; and Glasl, Johann, 4,315,825, Cl. 252-41.000.

Glienicke, Joachim, to Tmaschinen Forschungsvereinigung Verbrennungskra Maschinen. Aerodynamic multiple-wedge resilient bearing. 4,315,660, Cl. 308-9.000.

Gmohling, Werner: *See—*
Freissmuth, Alfred; Gmohling, Werner; and Rock, Heinrich, 4,315,773, Cl. 75-58.000.

Goda, Wilfried. Shot simulator using laser light for simulating guided missiles. 4,315,689, Cl. 356-141.000.

Godard, Pierre M. J. L.: *See—*
Brandts Buys, Ludwig D. G.; Godard, Pierre M. J. L.; Goossens, Henri C.; Mignard, Joseph J.; Wertz, Jean-Luc H. M. F. G.; and Mercier, Jean-Pierre, 4,315,959, Cl. 427-214.000.

Godwin, Robert H.; and Collignon, Herbert E., to Bliss & Laughlin. Mechanical height adjustment mechanism for chairs. 4,315,613, Cl. 248-406.000.

Gonder, Warren W. Collection of solar energy. 4,315,500, Cl. 126-425.000.

Goossens, Henri C.: *See—*
Brandts Buys, Ludwig D. G.; Godard, Pierre M. J. L.; Goossens, Henri C.; Mignard, Joseph J.; Wertz, Jean-Luc H. M. F. G.; and Mercier, Jean-Pierre, 4,315,959, Cl. 427-214.000.

Gorges, Denis E. Learning-relaxation device. 4,315,502, Cl. 128-1.00C.

Gorog, Istvan: *See—*
Russell, John P.; Firester, Arthur H.; and Gorog, Istvan, 4,316,279, Cl. 369-109.000.

Gorog, Peter: *See—*
Hajos, Gyorgy; Messmer, Andras; Benko, Pal; Petocz, Lujza; Gorog, Peter; and Kasoczky, Ibolya, 4,316,022, Cl. 544-184.000.

Gould, Norman P.: *See—*
Cragoe, Edward J., Jr.; Stokker, Gerald E.; and Gould, Norman P., 4,316,043, Cl. 560-53.000.

Goumont, Claude G.: *See—*
Baralle, Roger M.; Compere, Marcel A.; Pfaff, Maurice E.; and Goumont, Claude G., 4,315,986, Cl. 430-411.000.

Govoni, Gabriele: *See—*
Rinaldi, Roberto; Govoni, Gabriele; and Visani, Francesco, 4,316,009, Cl. 528-502.000.

Grachtrup, Heinz, to Krupp Polysius AG. Drive apparatus for rotary unit. 4,315,439, Cl. 74-661.000.

Grad-Line, Inc.: *See—*
Schritt, Renaldo F., 4,315,555, Cl. 180-140.000.

Graf, Franz: *See—*
Ries, Guenter; Juengst, Klaus-Peter; Foerster, Siegfried; Graf, Franz; Lehmann, Wolfgang; Unkelbach, Karl-Heinz; and Dueren, Gottfried, 4,315,816, Cl. 209-223.00A.

Graham, Tommy E.: *See—*
King, Duane E.; Harris, Billy J.; MacLean, Donald L.; and Graham, Tommy E., 4,315,819, Cl. 210-321.300.

Granderson, Hermas L. Skipping hoop apparatus. 4,315,623, Cl. 272-74.000.

Grant, James R., Jr.: *See—*
Beal, George W.; Grant, James R., Jr.; and Hanloser, Kurt J., 4,315,401, Cl. 60-261.000.

Graphic Controls Corporation: *See—*
Hubbard, James R.; and Tallerico, William A., 4,316,197, Cl. 346-140.00R.

Graves, James A.; and Reiling, Gilbert H., to General Electric Company. Triple-coil incandescent filament. 4,316,116, Cl. 313-344.000.

Gray, Stanley, to Mechanical Technology Incorporated. Hydrodynamic compliant thrust bearing and method of making. 4,315,359, Cl. 29-149.50A.

Grebe, Kurt R.: *See—*
Ames, Irving; Anacker, Wilhelm; Grebe, Kurt R.; and Kircher, Charles J., 4,316,200, Cl. 357-5.000.

Green, Carolyn J.: *See—*
Pigford, James W.; and Green, Carolyn J., 4,315,362, Cl. 29-433.000.

Green, Malcolm D.: *See—*
Waldron, John M.; Nott, Frederick J.; Harrison, Laurence C.; Johnson, Graham D.; and Green, Malcolm D., 4,316,112, Cl. 310-258.000.

Greener, Brian; and Pedder, Simon J., to SKF (U.K.) Limited. End cap assemblies for conveyor rollers. 4,315,566, Cl. 193-37.000.

Greenig, Nelson L.; and Shelton, Richard M., to Sperry Corporation. Graphic forms overlay apparatus. 4,316,199, Cl. 346-160.000.

Greenwood, William S.; Kuo, Ted L. C.; and Piasecki, Raymond F., to Thomas & Betts Corporation. Undercarpet wiring system installation kit. 4,315,662, Cl. 339-97.00C.

Greiner, Steven P.; Marshall, Wayne E.; and Sitterly, Linda G., to Kraft, Inc. Modified vegetable protein isolates. 4,315,946, Cl. 426-46.000.

Grondalski, David S., to Data General Corporation. Memory apparatus for digital computer system. 4,316,244, Cl. 364-200.000.

Grumman Aerospace Corporation: *See—*
Albrecht, Charles D.; and McCormick, Edward J., 4,316,259, Cl. 364-718.000.

Gschwend, Heinz W., to Ciba-Geigy Corporation. Dibenz[c,e]azepines. 4,315,926, Cl. 424-244.000.

GTE Products Corporation: *See—*
Bouchard, Andre C.; and English, George J., 4,315,733, Cl. 431-362.000.

Guilino, Gunther; and Barth, Rudolf, to Optische Werke G. Rodenstock. Progressive power ophthalmic lens. 4,315,673, Cl. 351-169.000.

Guillemot, Michel: *See—*
Devin, Bernard; Durand, Jean-Paul; and Guillemot, Michel, 4,315,498, Cl. 126-422.000.

Guillot, Gerard: *See—*
Cassat, Robert; and Guillot, Gerard, 4,316,002, Cl. 528-107.000.

Gulbins, Erich: *See—*
Kempter, Fritz E.; Schupp, Eberhard; and Gulbins, Erich, 4,315,840, Cl. 260-18.0TN.

Gulick, Jonathan F., to Cities Service Company. Apparatus for transporting the male ends of threaded tubing, pipe, or the like. 4,315,709, Cl. 414-22.000.

Gulliksen, John E., to Koehler Manufacturing Company. Method and apparatus for controlling reflected energy including dual light transmitting means for producing a spot to flood configuration. 4,316,241, Cl. 362-268.000.

Guls, Hans-Jurgen, to Veitscher Magnesitwerke-Actien-Gesellschaft. Carbon-containing and uncarbonized sinter magnesia refractories. 4,315,992, Cl. 501-101.000.

Gunderson, Norman R., to American Electronics, Inc. Automatic camera. 4,315,680, Cl. 354-195.000.

Gunn, Charles L.: *See—*
Prosise, Robert L.; Leveckis, Algis S.; and Gunn, Charles L., 4,316,070, Cl. 219-10.55E.

Gunter, Addison Y., deceased: *See—*
Smith, Ennis C.; and Gunter, Addison Y., deceased, 4,315,873, Cl. 261-158.000.

Gunter, Ann R., executrix: *See—*
Smith, Ennis C.; and Gunter, Addison Y., deceased, 4,315,873, Cl. 261-158.000.

Gutsche, Klaus: *See—*
Scharwaechter, Peter; Gutsche, Klaus; Kohlmann, Wilhelm; Kroemer, Gerd, deceased; Kroemer, Norma, legal representative; Kroemer, Helmut, legal representative; and Kroemer, Maria M., legal representative, 4,315,931, Cl. 424-251.000.

Gygli, Walter: *See—*
Zbornik, Vaclav; and Gygli, Walter, 4,315,425, Cl. 72-481.000.

H. B. Fuller Company: *See*—
Van Dover, Dennis W.; and Lindmark, Richard C., Jr., 4,315,878, Cl. 264-107.000.
Habermeier, Jurgen: *See*—
Buxbaum, Lothar; Habermeier, Jurgen; Breitenfellenr, Franz; and Kainmuller, Thomas, 4,315,849, Cl. 260-45.75B.
Habich, Adolph B.; and Hunt, Ronald E., to International Business Machines Corporation. Carrier for print element and ribbon cartridges. 4,315,694, Cl. 400-144.200.
Haemmerle AG: *See*—
Zbornik, Vaclav; and Gygli, Walter, 4,315,425, Cl. 72-481.000.
Hafele, Robert X. Method for forming a blown thermoplastic article. 4,315,888, Cl. 264-503.000.
Hagen, Helmut: *See*—
Merger, Franz; Hutmacher, Hans-Martin; and Hagen, Helmut, 4,315,869, Cl. 260-465.200.
Hagenmaier, Hans-Paul; Konig, Wilfried; Zahner, Hans; Fiedler, Hans-Peter; Dehler, Wolfgang; Keckeisen, Adelinde; Holst, Hartwig; and Zoebelein, Gerhard, to Bayer Aktiengesellschaft. Nikkomicins, a process for their preparation and their use as agents for combating pests. 4,315,922, Cl. 424-181.000.
Haggar Company: *See*—
Off, Joseph W. A.; and Early, Judson H., 4,315,793, Cl. 156-443.000.
Haglund, Gary J.: *See*—
Stone, Glen; and Haglund, Gary J., 4,315,892, Cl. 422-101.000.
Hagy, Henry E.; and Martin, Francis W., to Corning Glass Works. Very low expansion sealing frits. 4,315,991, Cl. 501-26.000.
Haines, Kenneth A., to Eidetic Images, Inc. Composite optical element having controllable light transmission and reflection characteristics. 4,315,665, Cl. 350-3.610.
Hajos, Gyorgy; Messmer, Andras; Benko, Pal; Petocz, Lujza; Gorog, Peter; and Kasoczky, Ibolya, to EGYT Gyogyszervegyeszeti Gyar. Benzo-as-triazine derivatives. 4,316,022, Cl. 544-184.000.
Halcon SD Group, Inc., The: *See*—
Costa, Lawrence C., 4,316,045, Cl. 560-130.000.
Costa, Lawrence C., 4,316,046, Cl. 560-130.000.
Haley, Howard E.: *See*—
Todd, Paul H., Jr.; and Haley, Howard E., 4,315,947, Cl. 426-250.000.
Hall, Robert D., to Standard Oil Company (Indiana). Method for reducing porosity of rubblized oil shale. 4,315,656, Cl. 299-1.000.
Haller, Jacob S.; Mines, Gordon L.; and Mischnick, Meinert J., to TRW Inc. Method for effecting clamping engagement. 4,315,367, Cl. 29-866.000.
Halliburton Company: *See*—
Luers, Thomas J.; and Giroux, Richard L., 4,315,543, Cl. 166-202.000.
Hamm, Purvis E. Device for practicing putting strokes. 4,315,626, Cl. 273-186.00C.
Hammer, Edward E.; and Lemmers, Eugene, to General Electric Company. Integrally ballasted fluorescent lamp unit. 4,316,121, Cl. 315-62.000.
Hammond, George W.: *See*—
Taylor, Peter A. J.; and Hammond, George W., 4,315,971, Cl. 428-419.000.
Hampel, Daniel; and Prost, Kalman J., to RCA Corporation. Data classifier. 4,316,177, Cl. 340-146.200.
Hamprecht, Gerhard; and Wuerzer, Bruno, to BASF Aktiengesellschaft. 4H-3,1-Benzoxazine derivatives. 4,315,766, Cl. 71-88.000.
Hamprecht, Gerhard; Acker, Rolf-Dieter; and Wuerzer, Bruno, to BASF Aktiengesellschaft. 5,6-Dihydro-1,2,4,6-thiatriazin-5-one-1,1-dioxides. 4,316,014, Cl. 544-7.000.
Hamprecht, Gerhard; Acker, Rolf-Dieter; and Wuerzer, Bruno, to BASF Aktiengesellschaft. 6H-1,2,4,6-Thiatriazine-1,1-dioxides. 4,316,015, Cl. 544-7.000.
Hanak, Joseph J., to RCA Corporation. High voltage series connected tandem junction solar battery. 4,316,049, Cl. 136-244.000.
Haneda, Hisao: *See*—
Kawamura, Tomotsuchi; and Haneda, Hisao, 4,315,485, Cl. 122-406.00R.
Hanegraaf, Johannes P.: *See*—
Breuers, Theo P. C.; and Hanegraaf, Johannes P., 4,315,687, Cl. 355-75.000.
Hanisko, John C. P., to Bendix Corporation, The. Voltage controlled oscillator having ratiometric and temperature compensation. 4,316,155, Cl. 331-18.000.
Hanloser, Kurt J.: *See*—
Beal, George W.; Grant, James R., Jr.; and Hanloser, Kurt J., 4,315,401, Cl. 60-261.000.
Hansen, Elo H.: *See*—
Ruzicka, Jaromir; and Hansen, Elo H., 4,315,754, Cl. 23-230.00R.
Hansen, Guenter: *See*—
Zeidler, Georg; Dehnert, Johannes; Hansen, Guenter; and Riedel, Guenther, 4,315,756, Cl. 44-59.000.
Hansen, James E.; and Rutchik, Walter L., to Eaton Corporation. Minimum size, integral, A.C. overload current sensing, remote power controller with reset lockout. 4,316,230, Cl. 361-114.000.
Hansen, Jens; and Schafer, Thomas, to Blaupunkt-Werke GmbH. Magnetic tape reproducer-recorder with means for tape segment identifying and locating. 4,316,224, Cl. 360-72.200.
Hanssle, Peter, to Chemische Werke Huels, Aktiengesellschaft. Secondary and tertiary 2-carboxyethyl- and carboxymethylphosphines and the salts thereof, as well as their preparation and use. 4,315,867, Cl. 260-439.00R.
Harada, Hatsunori: *See*—
Arakawa, Seiji; Seki, Tomio; Matsuoka, Hidekazu; Harada, Hatsunori; and Ninomiya, Michinari, 4,315,914, Cl. 424-89.000.
Harari, Eliyahou. Uniquely accessed RAM. 4,316,264, Cl. 365-190.000.
Harman, Neil W.: *See*—
Harris, Richard G.; and Harman, Neil W., 4,316,083, Cl. 235-449.000.
Harper-Wyman Company: *See*—
Schmitz, Charles J., 4,316,079, Cl. 219-413.000.
Harpold, C. W. Screen printing machine. 4,315,461, Cl. 101-115.000.
Harris, Billy J.: *See*—
King, Duane E.; Harris, Billy J.; MacLean, Donald L.; and Graham, Tommy E., 4,315,819, Cl. 210-321.300.
Harris, Richard G.; and Harman, Neil W., to Honeywell Information Systems Inc. Logic control system for a bistable magnetic wire badge reading system. 4,316,083, Cl. 235-449.000.
Harrison, David E., to Beatrice Foods Co. Toilet hinge arrangement. 4,315,338, Cl. 4-236.000.
Harrison, Laurence C.: *See*—
Waldron, John M.; Nott, Frederick J.; Harrison, Laurence C.; Johnson, Graham D.; and Green, Malcolm D., 4,316,112, Cl. 310-258.000.
Hartley, Henry F.; and Schuberth, Ralph G., to Honeywell Information Systems Inc. Battery switching apparatus included within a timer adapter unit. 4,316,246, Cl. 364-200.000.
Hartman, Susan E., to Eastman Kodak Company. Solid-state color imaging device having a color filter array using a photocrosslinkable barrier. 4,315,978, Cl. 430-4.000.
Hartsock, Dale L.: *See*—
Baker, Robert R.; and Hartsock, Dale L., 4,315,876, Cl. 264-40.100.
Hartung, Harold A.: *See*—
Stoller, Jerry H.; and Hartung, Harold A., 4,315,763, Cl. 71-29.000.
Haruta, Yoshikatu: *See*—
Onishi, Masayoshi; Haruta, Yoshikatu; Sakurai, Toshiyuki; and Yamamoto, Shigemi, 4,315,493, Cl. 123-617.000.
Hasegawa, Tory: *See*—
Higashide, Eiji; Asai, Mitsuko; and Hasegawa, Tory, 4,315,989, Cl. 435-253.000.
Hasegwa, Shigekazu: *See*—
Nakamura, Norimi; Okuyama, Shigeaki; Hasegwa, Shigekazu; Katayama, Yoshiyuki; and Obe, Mituhiko, 4,315,548, Cl. 172-430.000.
Hashimoto, Masafumi: *See*—
Kobayashi, Hiroyuki; and Hashimoto, Masafumi, 4,316,208, Cl. 357-55.000.
Hashimoto, Yuji: *See*—
Kawashima, Yoshinori; and Hashimoto, Yuji, 4,315,750, Cl. 474-153.000.
Haskell, Theodore H.: *See*—
Doub, Leonard; Haskell, Theodore H.; Mich, Thomas F.; and Schweiss, Dietrich, 4,315,858, Cl. 260-239.100.
Mich, Thomas F.; Haskell, Theodore H.; and Hutt, Marland P., Jr., 4,315,933, Cl. 424-251.000.
Hatano, Yoshihiro; Ikegami, Seishi; Itoh, Kenji; and Matsumoto, Mansuke, to Yamamoto Kagaku Gosei Co., Ltd. Process for the preparation of copper quinolinate. 4,316,026, Cl. 546-5.000.
Hattori, Katsuhide; Fukatsu, Yoshiaki; and Takahashi, Masao, to Nippon Oil and Fats Company, Limited. Water-in-oil emulsion explosive composition with imidazoline derivative emulsifier. 4,315,784, Cl. 149-2.000.
Hattori, Katsuhide; Fukatsu, Yoshiaki; and Takahashi, Masao, to Nippon Oil and Fats Co. Ltd. Water-in-oil emulsion explosive composition. 4,315,787, Cl. 149-2.000.
Havens, Carl B., to Dow Chemical Co., The. Thermoplastic film with integral ribbed pattern and bag therefrom. 4,315,963, Cl. 428-35.000.
Hawk, Charles E., to Teledyne Industries, Inc. Adjustable flow divider for mass flowmeters. 4,315,431, Cl. 73-203.000.
Haws, Warren J.: *See*—
Nadkarni, Anil V.; Haws, Warren J.; and Whitman, Charles I., 4,315,777, Cl. 75-232.000.
Hay, Louis E.: *See*—
Mercer, Roger W.; and Hay, Louis E., 4,315,740, Cl. 433-63.000.
Hayakawa, Shigeru: *See*—
Ohji, Kenzo; Yamazaki, Osamu; Wasa, Kiyotaka; and Hayakawa, Shigeru, 4,315,960, Cl. 427-248.100.
Hayashi, Hideo: *See*—
Tsuchiya, Shozo; Oshima, Akio; and Hayashi, Hideo, 4,315,842, Cl. 260-28.50B.
Hayashi, Hideyuki; and Okuma, Shigeru, to Toyota Jidosha Kogyo Kabushiki Kaisha. Disc brake for preventing squeak noise. 4,315,563, Cl. 188-73.100.
Hayashi, Taro; and Moriyama, Aritsune, to Sanko Air Plant, Ltd. Air-curtaining apparatus for fire protection. 4,315,456, Cl. 98-36.000.
Hayashi, Tsutomu; Inoue, Hidehiko; and Sato, Makoto, to Honda Giken Kogyo Kabushiki Kaisha. Vehicular anti-skid brake device. 4,315,659, Cl. 303-116.000.
Hedel, Rudolph H., to RCA Corporation. Method for the manufacture of capacitive pickup styli. 4,315,358, Cl. 29-25.420.
Hehl, Karl. Adjustable slide shoe for die carrier plate of injection molding machine. 4,315,728, Cl. 425-589.000.
Heidrich, Arthur J., to General Electric Company. Horizontal beam width integrator. 4,315,746, Cl. 434-2.000.
Heiligtag, Donald G.: *See*—
Heiligtag, Raymond W.; Heiligtag, Donald G.; and Heiligtag, Donald R., 4,315,700, Cl. 404-111.000.

Heiligtag, Donald R.: *See—*
Heiligtag, Raymond W.; Heiligtag, Donald G.; and Heiligtag, Donald R., 4,315,700, Cl. 404-111.000.
Heiligtag, Raymond W.; Heiligtag, Donald G.; and Heiligtag, Donald R. Implement for applying sealant to asphalt pavement or the like. 4,315,700, Cl. 404-111.000.
Heinecke, Rudolf A. H.; and Moule, David J., to International Standard Electric Corporation. Mask alignment for semiconductor processing. 4,315,692, Cl. 356-399.000.
Heisler, Robert W.: *See—*
French, David W.; Heisler, Robert W.; Maldarella, Antonio, Jr.; and Vanhoy, Gilbert W., 4,315,630, Cl. 277-207.00A.
Hellsten, Karl M. E.; Johansson, Inger G.; and Karlsson, Birgit T. G., to Berol Kemi A.B. Hydrocarbon oils containing 1 to 10 percent emulsified water and emulsifiers therefor. 4,315,755, Cl. 44-51.000.
Helwig, William F., Jr., to Avtec Industries, Inc. Electric current detector circuit. 4,316,229, Cl. 361-42.000.
Henderson, Richard C., to Hughes Aircraft Company. Method of controlling MOSFET threshold voltage with self-aligned channel stop. 4,315,781, Cl. 148-1.500.
Hendricks, Donald B.; and Knight, Robert M., to MicroComm Corporation. Thermostat with automatic heat/air conditioning changeover. 4,316,256, Cl. 364-505.000.
Henkel Kommanditgesellschaft auf Aktien: *See—*
Schweizer, Dieter; and Glasl, Johann, 4,315,825, Cl. 252-41.000.
Henning, Georg; and Lotsch, Wolfgang, to BASF Aktiengesellschaft. Isoindoline colorants. 4,316,023, Cl. 544-300.000.
Henze, Thomas W.: *See—*
Suplinskas, Raymond J.; and Henze, Thomas W., 4,315,968, Cl. 428-367.000.
Herchenbach, Horst: *See—*
Ramesohl, Hubert; and Herchenbach, Horst, 4,315,734, Cl. 432-14.000.
Hereth, Alfred; Rieger, Klaus; and Wildgruber, Josef, to Hoechst Aktiengesellschaft. Process for protecting metal or lacquered surfaces. 4,315,957, Cl. 427-155.000.
Hermann Berstorff Maschinenbau GmbH: *See—*
Chszaniecki, Siegfried, 4,315,440, Cl. 74-665.00G.
Hewlett-Packard Company: *See—*
Meyer, Gerald L., 4,316,152, Cl. 331-1.00A.
Heyd, Allen; and Shah, Nutan B., to Richardson-Vicks Inc. Non-adhesive gel compositions for stabilizing dentures. 4,315,779, Cl. 106-35.000.
Hibino, Yutaka: *See—*
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Jarman, Davis R.; and Hinson, Virgil H., 4,315,424, Cl. 72-479.000.
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Holland, William P.: *See—*
Shapiro, Jonathan S.; and Holland, William P., 4,316,129, Cl. 318-313.000.
Hollis, Roger E.: *See—*
Neroda, Thomas H.; and Hollis, Roger E., 4,315,343, Cl. 15-339.000.
Holst, Hartwig: *See—*
Hagenmaier, Hans-Paul; Konig, Wilfried; Zahner, Hans; Fiedler, Hans-Peter; Dehler, Wolfgang; Keckeisen, Adelinde; Holst, Hartwig; and Zoebelein, Gerhard, 4,315,922, Cl. 424-181.000.
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Hayashi, Tsutomu; Inoue, Hidehiko; and Sato, Makoto, 4,315,659, Cl. 303-116.000.
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Evert, Donald A., 4,316,271, Cl. 367-140.000.
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Khan, Muhammad A.; Kruse, Paul W., Jr.; and Ready, John F., 4,316,147, Cl. 324-300.000.
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van't Hullenaar, Adrian, deceased, 4,316,269, Cl. 367-90.000.
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Witt, Enrique R.; Humphrey, William J.; and Cave, James P., 4,315,823, Cl. 210-605.000.
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Habich, Adolph B.; and Hunt, Ronald E., 4,315,694, Cl. 400-144.200.
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Schmitt, Richard L.; Lai, Ban-Yen; and Husain, Matloob, 4,315,404, Cl. 60-690.000.
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Merger, Franz; Hutmacher, Hans-Martin; and Hagen, Helmut, 4,315,869, Cl. 260-465.200.
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Mich, Thomas F.; Haskell, Theodore H.; and Hutt, Marland P., Jr., 4,315,933, Cl. 424-251.000.
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Hydrocarbon Research, Inc.: *See*—
Karolkiewicz, Walter F.; and Rao, Pradip, 4,315,824, Cl. 210-769.000.
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Corbier, Robert; and Arnaud, Robert, 4,316,088, Cl. 250-338.000.
Iannone, Samuel J. Rod driver. 4,315,551, Cl. 173-128.000.
Ibrahim, Fayez F., to Tyler Refrigeration Corporation. Automatic cleaning of refrigerated case interior surfaces. 4,315,414, Cl. 62-231.000.
Icopal Baustoffe, Firma: *See*—
Sylvest, Erik, 4,315,392, Cl. 52-309.100.
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Imhof, Rene; and Kyburz, Emilio, to Hoffmann-La Roche Inc. Phenylquinolizidines. 4,316,030, Cl. 546-138.000.
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Strang, Robert E., Sr., 4,315,803, Cl. 202-158.000.
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Bobillon, Jean-Paul, 4,315,771, Cl. 75-41.000.
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Patel, Jitendra G.; Sandstrom, William A.; and Tarman, Paul B., 4,315,758, Cl. 48-197.00R.
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Semerdjiev, Stefan G.; and Popov, Nikolay T., 4,315,726, Cl. 425-560.000.
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Jansing, Walter, 4,315,644, Cl. 285-179.000.
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Broers, Alec N.; Cuomo, Jerome J.; Laibowitz, Robert B.; and Molzen, Walter W., Jr., 4,316,093, Cl. 250-492.100.
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Kleen, Bergert G.; Lamoureux, William R.; and Martin, William J., 4,316,123, Cl. 315-169.400.
Parzanici, Remo E., 4,315,682, Cl. 355-3.0FU.
Snellman, Donald L., 4,315,621, Cl. 271-296.000.
Woodall, Jerry M., 4,316,048, Cl. 136-253.000.
International Flavors & Fragrances Inc.: *See*—
Boden, Richard M., 4,315,911, Cl. 424-48.000.
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Sprecker, Mark A., 4,315,945, Cl. 426-3.000.

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Reed, Claude A., 4,315,950, Cl. 426-509.000.
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Yanaka, Takashi; and Shirota, Kohei, 4,316,087, Cl. 250-307.000.
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Heinecke, Rudolf A. H.; and Moule, David J., 4,315,692, Cl. 356-399.000.
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Krause, Irving A., 4,316,154, Cl. 331-4.000.
Muller, Michael; Palmer, Reed A.; and Marker, Harry R., 4,316,066, Cl. 200-670.000.
Root, Errol L., 4,316,139, Cl. 324-52.000.
Intersci Corporation: *See*—
Tamers, Murry A., 4,315,890, Cl. 422-58.000.
Intrieri, Salvatore, Jr.: *See*—
Rupp, Anthony P.; Intrieri, Salvatore, Jr.; and Walkley, Arthur H., IV, 4,315,780, Cl. 134-7.000.
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Oki, Toshikazu; Yoshimoto, Akihiro; Matsuzawa, Yasue; Inui, Taiji; Takeuchi, Tomio; and Umezawa, Hamao, 4,316,011, Cl. 536-17.00A.
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Irmer, Heimbert U.: *See*—
Rosler, Helmut; Irmer, Heimbert U.; and Bigall, Klaus-Dieter, 4,316,104, Cl. 307-308.000.
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Tanaka, Eiichi; and Ishibashi, Noboru, 4,315,729, Cl. 431-75.000.
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Sato, Masaki; Okuda, Hironori; Ito, Motoya; Makino, Yuji; Wachi, Yasuyuki; Takahashi, Noriyoshi; and Watanabe, Masatoshi, 4,316,113, Cl. 310-262.000.
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Hosoe, Kazuya; Shinoda, Nobuhiko; Fukuda, Minoru; Kawabata, Takashi; Kinoshita, Takao; and Ito, Tadashi, 4,315,674, Cl. 354-25.000.
Ito, Thomas I.: *See*—
United States of America, National Aeronautics and Space Administration; Kratzer, Reinhold H.; Paciorek, Kazimiera J. L.; Ito, Thomas I.; and Rosser, Robert W., 4,316,035, Cl. 548-131.000.
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Hatano, Yoshihiro; Ikegami, Seishi; Itoh, Kenji; and Matsumoto, Mansuke, 4,316,026, Cl. 546-5.000.
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Tanaka, Hirotoshi; Kawajiri, Yoshiki; Chiba, Kouetsu; Hori, Ryoichi; and Itoh, Kiyoo, 4,316,265, Cl. 365-203.000.
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Ueda, Setsuo; Yasuda, Takashi; Yamada, Tokuyoshi; and Kobayashi, Shigeki, 4,315,720, Cl. 425-8.000.
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Aoki, Masakazu; Takemoto, Iwao; Kubo, Masaharu; and Izawa, Ryuichi, 4,316,205, Cl. 357-30.000.
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Bottcher, Hugo, 4,315,792, Cl. 156-306.600.
J. M. Huber Corporation: *See*—
Aboytes, Peter, 4,315,844, Cl. 260-42.160.
Jacobs, John H., to Bell & Howell Corporation. Illumination and light gate utilization methods and apparatus. 4,316,196, Cl. 346-1.100.
Jacques, Roland: *See*—
Bouge, Gilbert; Jacques, Roland; Poisson, Regis; and Seigneurin, Laurent, 4,315,839, Cl. 252-448.000.
Jaeschke, Harold R., to Champion International Corporation. Replacement wheel display carton. 4,315,569, Cl. 206-45.310.
Jaisinghani, Rajan A., to Nelson Industries, Inc. Process and apparatus for separating liquids. 4,315,822, Cl. 210-794.000.
Jakobsson, Per A. H.: *See*—
Larrson, Karl I.; and Jakobsson, Per A. H., 4,315,761, Cl. 71-21.000.
James, Douglas J.: *See*—
Dosi, Mahendra K.; James, Douglas J.; and Pasternak, Anthony W., 4,316,157, Cl. 372-59.000.
James, Jack E.: *See*—
Wharton, James H.; and James, Jack E., 4,316,213, Cl. 358-11.000.
Janome Sewing Machine Co. Ltd.: *See*—
Makabe, Hachiro; Watanabe, Kazuo; Takenoya, Hideaki; Shomura, Eiichi; and Tonomura, Yoshinobu, 4,315,472, Cl. 112-158.00E.
Jansing, Walter, to Interatom Internationale Atomreaktorbau GmbH. Multishell pipe bend. 4,315,644, Cl. 285-179.000.
Japan Synthetic Rubber Co., Ltd.: *See*—
Akiyama, Takeshi; Koide, Toshiyuki; and Nagasawa, Mutsuo, 4,315,966, Cl. 428-260.000.
Jarman, Davis R.; and Hinson, Virgil H. Vehicle body clamp. 4,315,424, Cl. 72-479.000.
Jelinek, Istvan: *See*—
Lugosi, Gyorgy; Simay, Antal; Bodnar, Janos; Turcsan, Istvan; Jelinek, Istvan; Somfai, Eva; and Simandi, Laszlo, 4,315,861, Cl. 260-340.90R.
Jellies, David A., to Magic Chef, Inc. Stabilizer for hinge of removable oven door. 4,315,495, Cl. 126-194.000.
Jenkins, Jack J. Single trigger firing of double barrel side-by-side or over-under firearms. 4,315,377, Cl. 42-42.00R.
Jensen, Bruce A., to Phillips Petroleum Company. Fractional distillation process control. 4,316,255, Cl. 364-501.000.
Jetter, Milton W. Remote-controlled alarm clock. 4,316,273, Cl. 368-47.000.
Jilken, Leif A. Method and device for measuring and detecting a change in the mechanical state of a body. 4,316,146, Cl. 324-209.000.
JJNR Corporation: *See*—
Rowbottam, Francis W.; Skinner, Nathan L.; Niswonger, John O.; and Wadler, Milt, 4,315,732, Cl. 431-344.000.
Jodrey, Robert M.; and Young, Kenneth, to Dennison Manufacturing Company. High speed decoration. 4,315,795, Cl. 156-542.000.
Johansson, Inger G.: *See*—
Hellsten, Karl M. E.; Johansson, Inger G.; and Karlsson, Birgit T. G., 4,315,755, Cl. 44-51.000.
John Zink Company: *See*—
Wilson, Roy J., 4,315,415, Cl. 62-263.000.
Johns-Manville Corporation: *See*—
French, David W.; Heisler, Robert W.; Maldarella, Antonio, Jr.; and Vanhoy, Gilbert W., 4,315,630, Cl. 277-207.00A.
Johnson, Bruce K., to Polaroid Corporation. Method and apparatus for selectively positioning spectral filter. 4,315,675, Cl. 354-26.000.
Johnson, Bruce K.; and Whiteside, George D., to Polaroid Corporation. Calibration arrangement for exposure control system. 4,315,677, Cl. 354-49.000.
Johnson, Bruce K.: *See*—
LaRocque, Arthur G.; Whiteside, George D.; and Johnson, Bruce K., 4,315,676, Cl. 354-27.000.
Johnson, Charles B.: *See*—
Young, Ian A.; Hildebrand, David B.; and Johnson, Charles B., 4,316,106, Cl. 307-481.000.
Johnson, David A.: *See*—
Walker, Derek; Silvestri, Herbert H.; Sapino, Chester; and Johnson, David A., 4,316,016, Cl. 544-16.000.
Walker, Derek; Silvestri, Herbert H.; Sapino, Chester; and Johnson, David A., 4,316,017, Cl. 544-026.000.
Johnson, Graham D.: *See*—
Waldron, John M.; Nott, Frederick J.; Harrison, Laurence C.; Johnson, Graham D.; and Green, Malcolm D., 4,316,112, Cl. 310-258.000.
Johnson, Philip, Jr.; Mendoza, Luis; and Sodaro, Donald, to Innkeepers Electronics, Inc. Energy conservation system for inns, hotels, and motels. 4,315,596, Cl. 236-94.000.
Jones, Philip; and Storey, Moorfield, Jr., to Boeing Company, The. Servo loop processor. 4,316,193, Cl. 343-112.00D.
Jones, William W.: *See*—
Kelley, Charles K.; and Jones, William W., 4,315,704, Cl. 406-12.000.
Joslyn Mfg. and Supply Co.: *See*—
Lusk, George E., 4,315,699, Cl. 403-361.000.
Juengst, Klaus-Peter: *See*—
Ries, Guenter; Juengst, Klaus-Peter; Foerster, Siegfried; Graf, Franz; Lehmann, Wolfgang; Unkelbach, Karl-Heinz; and Dueren, Gottfried, 4,315,816, Cl. 209-223.00A.
Jungkind, Walter: *See*—
Frascara, Jorge; Jungkind, Walter; Ladan, Carol J.; and Nelson, Thomas M., 4,315,748, Cl. 434-159.000.
Kabushiki Kaisha Daini Seikosha: *See*—
Tabata, Junichi, 4,316,275, Cl. 368-66.000.
Kabushiki Kaisha Komatsu Seisakusho: *See*—
Fukuda, Eiichi, 4,315,441, Cl. 74-665.00M.
Isoya, Toshisuke; Mishiro, Masayuki; and Yokoshima, Naohiko, 4,316,075, Cl. 219-124.220.

Kabushiki Kaisha Sato: *See*—
Sato, Yo, 4,315,460, Cl. 101-93.090.
Kabushiki Kaisha Suwa Seikosha: *See*—
Naito, Okito, 4,316,272, Cl. 368-21.000.
Ushikoshi, Kenichi, 4,316,274, Cl. 368-66.000.
Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See*—
Nakaho, Junichi; and Ougimoto, Takao, 4,316,168, Cl. 337-359.000.
Kainmuller, Thomas: *See*—
Buxbaum, Lothar; Habermeier, Jurgen; Breitenfellenr, Franz; and Kainmuller, Thomas, 4,315,849, Cl. 260-45.75B.
Kaiser, Rolf: *See*—
Frey, Walter; and Kaiser, Rolf, 4,315,416, Cl. 62-438.000.
Kaji, Takeyuki: *See*—
Miyabayashi, Susumu; and Kaji, Takeyuki, 4,316,171, Cl. 338-21.000.
Kalopissis, Gregoire; Vanlerberghe, Guy; and Sebag, Henri, to L'Oreal. Cationic surfactants. 4,315,912, Cl. 424-70.000.
KALSEC, Inc.: *See*—
Todd, Paul H., Jr.; and Haley, Howard E., 4,315,947, Cl. 426-250.000.
Kaltenbach, Volker Bensberg: *See*—
Korber, Joachim; Bange, Gunter; Poll, Walter; Kaltenbach, Volker Bensberg; and Pittroff, Hans, 4,316,175, Cl. 340-57.000.
Kalteyer, Gerd: *See*—
Adam, Wilhelm; Ulrich, Hannsjorg; Dany, Franz-Josef; and Kalteyer, Gerd, 4,315,961, Cl. 427-385.500.
Kamaya Kagaku Kogyo Co., Ltd.: *See*—
Taoka, Fumio; Tanno, Norimichi; and Watanabe, Hideo, 4,315,724, Cl. 425-130.000.
Kaminski, David G., to Sperry Corporation. Variable frequency logic clock. 4,316,148, Cl. 328-55.000.
Kamoshita, Katsuzo: *See*—
Kosuge, Yoshiaki; Yoshida, Ryo; Sumida, Seizo; Oshita, Hirofumi; Otsuki, Soji; and Kamoshita, Katsuzo, 4,315,768, Cl. 71-98.000.
Kanchev, Peter K., to Bulgarsko Radio. Compensator for the horizontal angular error of a record player arm. 4,316,280, Cl. 369-250.000.
Kandler, Joachim: *See*—
Staendeke, Horst; Adam, Wilhelm; Dany, Franz-Josef; and Kandler, Joachim, 4,315,897, Cl. 423-274.000.
Kanomata, Ichiro: *See*—
Sakudo, Noriyuki; Tokiguchi, Katsumi; Koike, Hidemi; and Kanomata, Ichiro, 4,316,090, Cl. 250-423.00R.
Karl Mayer Textilmaschinenfabrik GmbH: *See*—
Kernbichler, Bert; and Wilkens, Christian, 4,315,419, Cl. 66-87.000.
Karl, Robert D., to Amtel, Inc. Offshore liquified gas transfer system. 4,315,408, Cl. 62-55.000.
Karlson, Eskil L. Apparatus for continuous electrochromatographic separation. 4,315,812, Cl. 204-299.00R.
Karlsson, Birgit T. G.: *See*—
Hellsten, Karl M. E.; Johansson, Inger G.; and Karlsson, Birgit T. G., 4,315,755, Cl. 44-51.000.
Karolkiewicz, Walter F.; and Rao, Pradip, to Hydrocarbon Research, Inc. Filtration of coal-derived liquids containing particulate solids. 4,315,824, Cl. 210-769.000.
Kasahara, Isamu: *See*—
Ishimitsu, Keiichi; Kasahara, Isamu; Yamada, Tomio; Matsuda, Michihiko; Takahashi, Hidemitsu; and Soma, Shuichi, 4,316,044, Cl. 560-105.000.
Kashiwa, Norio: *See*—
Ushida, Yoshihisa; Amimoto, Yoshikatu; Toyota, Akinori; and Kashiwa, Norio, 4,315,874, Cl. 264-5.000.
Kasoczky, Ibolya: *See*—
Hajos, Gyorgy; Messmer, Andras; Benko, Pal; Petocz, Lujza; Gorog, Peter; and Kasoczky, Ibolya, 4,316,022, Cl. 544-184.000.
Katayama, Kakuji, to Katayama Kogyo Co., Ltd. Bellows type exhaust tube. 4,315,558, Cl. 181-227.000.
Katayama Kogyo Co., Ltd.: *See*—
Katayama, Kakuji, 4,315,558, Cl. 181-227.000.
Katayama, Nobuaki: *See*—
Numazawa, Akio; and Katayama, Nobuaki, 4,315,564, Cl. 192-53.00F.
Katayama, Yoshiyuki: *See*—
Nakamura, Norimi; Okuyama, Shigeaki; Hasegwa, Shigekazu; Katayama, Yoshiyuki; and Obe, Mituhiko, 4,315,548, Cl. 172-430.000.
Kato, Nobuharu: *See*—
Ishii, Masami; Kato, Nobuharu; and Hota, Mikio, 4,315,791, Cl. 156-304.200.
Katsube, Junki; Ono, Keiichi; and Kawakami, Hajime, to Sumitomo Chemical Company, Limited. Process for producing eburnane derivatives. 4,316,028, Cl. 546-51.000.
Katsuyama, Harumi: *See*—
Kawamura, Koichi; Katsuyama, Harumi; and Sato, Hideo, 4,315,983, Cl. 430-70.000.
Kaupp, Robert F.: *See*—
Seeman, Howard H.; and Kaupp, Robert F., 4,315,486, Cl. 122-510.000.
Kawabata, Takashi: *See*—
Hosoe, Kazuya; Shinoda, Nobuhiko; Fukuda, Minoru; Kawabata, Takashi; Kinoshita, Takao; and Ito, Tadashi, 4,315,674, Cl. 354-25.000.
Kawachi, Hideo: *See*—
Nakamichi, Niro; and Kawachi, Hideo, 4,316,226, Cl. 360-109.000.
Kawaguchi, Masayuki: *See*—
Takahashi, Kotei; Endo, Teruo; Kawaguchi, Masayuki; and Sakamoto, Kenichi, 4,315,698, Cl. 403-59.000.
Kawajiri, Yoshiki: *See*—
Tanaka, Hirotoshi; Kawajiri, Yoshiki; Chiba, Kouetsu; Hori, Ryoichi; and Itoh, Kiyoo, 4,316,265, Cl. 365-203.000.
Kawakami, Hajime: *See*—
Katsube, Junki; Ono, Keiichi; and Kawakami, Hajime, 4,316,028, Cl. 546-51.000.
Kawamata, Etsuo: *See*—
Matsuura, Kazuo; Shiraishi, Takeichi; Kawamata, Etsuo; Kuroda, Nobuyuki; and Miyoshi, Mituji, 4,315,999, Cl. 526-114.000.
Kawamoto, Nobuyuki: *See*—
Tomoshige, Toru; Furuta, Harumi; Tachi, Akihiro; and Kawamoto, Nobuyuki, 4,315,863, Cl. 260-346.740.
Kawamura, Koichi; Katsuyama, Harumi; and Sato, Hideo, to Fuji Photo Film Co., Ltd. 2,6-Di-tert-butyl-4-substituted thiopyrylium salt, process for production of same, and a photoconductive composition containing same. 4,315,983, Cl. 430-70.000.
Kawamura, Tomotsuchi; and Haneda, Hisao, to Sulzer Brothers Limited; and Mitsubishi Heavy Industries Ltd. Vapor generator for fuels having different flame radiation intensities. 4,315,485, Cl. 122-406.00R.
Kawarabuki, Seiichi: *See*—
Miwa, Naoto; Masuda, Yoshiro; Kawarabuki, Seiichi; Sai, Toshiyuki; and Saito, Takao, 4,315,988, Cl. 435-221.000.
Kawashima, Yoshinori; and Hashimoto, Yuji, to Honda Giken Kogyo Kabushiki Kaisha. Sprocket chain. 4,315,750, Cl. 474-153.000.
Kay, Arthur H.; and Dziewulski, Ted, to Phillips Petroleum Co. Plant container. 4,315,382, Cl. 47-66.000.
Kayser, John P.; and Rick, Norman A., to Airco, Inc. Positive pulse device. 4,315,506, Cl. 128-276.000.
Keating, Bernard L.: *See*—
Bradley, Ronald W.; Carl, David G.; and Keating, Bernard L., 4,315,573, Cl. 215-12.00R.
Keating, Patrick N.: *See*—
Sawatari, Takeo; Keating, Patrick N.; Steinberg, Ronald F.; and Mueller, Rolf K., 4,316,191, Cl. 343-16.00R.
Keckeisen, Adelinde: *See*—
Hagenmaier, Hans-Paul; Konig, Wilfried; Zahner, Hans; Fiedler, Hans-Peter; Dehler, Wolfgang; Keckeisen, Adelinde; Holst, Hartwig; and Zoebelein, Gerhard, 4,315,922, Cl. 424-181.000.
Kelley, Charles K.; and Jones, William W., to Charles K. Kelley and Sons Inc. Single line pneumatic tube system. 4,315,704, Cl. 406-12.000.
Kempter, Fritz E.; Schupp, Eberhard; and Gulbins, Erich, to BASF Aktiengesellschaft. Preparation of cathodic electrocoating binders. 4,315,840, Cl. 260-18.0TN.
Kennedy, Alvin B., Jr.; and Wright, Steven W. Dual safe helmet. 4,315,335, Cl. 2-424.000.
Kenny, Andrew A.: *See*—
Anderson, Patrick J.; and Kenny, Andrew A., 4,315,521, Cl. 137-85.000.
Kerb, Ulrich: *See*—
Schulze, Paul-Eberhard; and Kerb, Ulrich, 4,315,866, Cl. 260-397.300.
Kerey, Gyorgy: *See*—
Takacs, Istvan; Kerey, Gyorgy; Illes, Janos; Rudolf, Peter; Gere, Pal; Czebe, Laszlo; and Neszmelyi, Erzsebet, 4,315,923, Cl. 424-183.000.
Kernbichler, Bert; and Wilkens, Christian, to Karl Mayer Textilmaschinenfabrik GmbH. Contoured pile fabric and a process for the preparation thereof. 4,315,419, Cl. 66-87.000.
Kerr-McGee Refining Corporation: *See*—
Gearhart, Junior A., 4,315,815, Cl. 208-321.000.
Kessler, Seymour A. Drawer slide. 4,315,661, Cl. 312-330.00R.
Keukelaar, Ronald E.: *See*—
Rourke, John L.; and Keukelaar, Ronald E., 4,315,837, Cl. 252-430.000.
Khan, Muhammad A.; Kruse, Paul W., Jr.; and Ready, John F., to Honeywell Inc. Apparatus for determining the composition of mercury-cadmium-telluride and other alloy semiconductors. 4,316,147, Cl. 324-300.000.
Khodosh, Vladimir A.: *See*—
Ivanov, Valentin A.; Khodosh, Vladimir A.; Ostrovsky, Igor S.; Shenkman, Mikhail Y.; Koshelev, Jury A.; Vlasov, Sergei N.; Pachulia, Budu P.; and Fishman, Iosif D. Y., 4,315,701, Cl. 405-150.000.
Khutoretsky, Garri M.: *See*—
Zagorodnaya, Galina A.; Khutoretsky, Garri M.; and Vartanian, Gurgen P., 4,316,114, Cl. 310-270.000.
Kidde Consumer Durables Corp.: *See*—
Booty, Donald A.; and Weisburg, David, 4,316,238, Cl. 362-147.000.
Kihn, Harry, to Cooper Medical Devices Corporation. Method of performing male sterilization. 4,315,510, Cl. 128-303.100.
Kimberly-Clark Corporation: *See*—
Austin, Jared A.; and Van Iten, Thomas P., 4,315,347, Cl. 19-145.700.
Bolick, Martha E., 4,315,508, Cl. 128-289.000.
Whitehead, Howard A.; and Matray, Attila, 4,315,507, Cl. 128-287.000.
Kimchi, Yigal: *See*—
Vardi, Isaih; Kimchi, Yigal; and Ben-Dror, Jonathan, 4,315,411, Cl. 62-112.000.
Kimura, Masanobu: *See*—
Nishiguchi, Fumio; Ueno, Masataka; and Kimura, Masanobu, 4,315,715, Cl. 415-207.000.

Kimura, Takeshi: *See*—
Fujiwara, Hideo; Kudo, Mitsuhiro; Tamura, Teizou; Sugishita, Nobuyuki; Shiroishi, Yoshihiro; Kimura, Takeshi; Shinagawa, Kiminari; and Kumasaka, Noriyuki, 4,316,228, Cl. 360-127.000.

Kimura, Tsutomu, to Fuji Photo Film Co., Ltd. Data processing system for a COM. 4,316,261, Cl. 364-900.000.

King, Duane E.; Harris, Billy J.; MacLean, Donald L.; and Graham, Tommy E., to Monsanto Company. Hollow fiber permeator apparatus. 4,315,819, Cl. 210-321.300.

King, Stephen J., to Nash Engineering Company, The. Evacuation system with precondenser. 4,315,717, Cl. 417-69.000.

Kingery, Charles A., to Marting Mfg. Inc. Animal feeder. 4,315,484, Cl. 119-53.000.

Kingston, William. Line haulers. 4,315,617, Cl. 254-371.000.

Kinkead, Jordan A., to Fitness Motivation Institute of America. Caliper for applying constant pressure to an object being measured. 4,315,372, Cl. 33-148.00F.

Kinoshita, Takao: *See*—
Hosoe, Kazuya; Shinoda, Nobuhiko; Fukuda, Minoru; Kawabata, Takashi; Kinoshita, Takao; and Ito, Tadashi, 4,315,674, Cl. 354-25.000.

Kircher, Charles J.: *See*—
Ames, Irving; Anacker, Wilhelm; Grebe, Kurt R.; and Kircher, Charles J., 4,316,200, Cl. 357-5.000.

Kircher, Morton S., to Olin Corporation. Electrode for monopolar filter press cells. 4,315,810, Cl. 204-257.000.

Kircher, Morton S., to Olin Corporation. Reinforced metal channels for cell frame. 4,315,811, Cl. 204-279.000.

Kirchmayr, Rudolf: *See*—
Felder, Louis; Kirchmayr, Rudolf; and Husler, Rinaldo, 4,315,807, Cl. 204-159.180.

Kitada, Chieko: *See*—
Fujino, Masahiko; and Kitada, Chieko, 4,315,853, Cl. 260-112.50R.

Kitamura, Eiichi: *See*—
Inagaki, Nobuhiro; Kitamura, Eiichi; and Namazu, Ryosuke, 4,316,204, Cl. 357-30.000.

Kiwala, Jacob: *See*—
Trenkle, Robert W.; Mookherjee, Braja D.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,315,953, Cl. 426-538.000.

Klaubert, Dieter H.: *See*—
Sellstedt, John H.; and Klaubert, Dieter H., 4,316,037, Cl. 548-253.000.

Kleen, Bergert G.; Lamoureux, William R.; and Martin, William J., to International Business Machines Corporation. Staggered sustain voltage generator and technique. 4,316,123, Cl. 315-169.400.

Klein, Rolf: *See*—
Giebel, Gerhard; and Klein, Rolf, 4,315,341, Cl. 12-10.500.

Klockner-Humboldt-Deutz AG: *See*—
Megerle, Friedrich; and Kruger, Jorg, 4,315,620, Cl. 266-193.000.
Ramesohl, Hubert; and Herchenbach, Horst, 4,315,734, Cl. 432-14.000.
Rao, Chatty; and Bender, Hans, 4,315,972, Cl. 428-542.000.
Ries, Guenter; Juengst, Klaus-Peter; Foerster, Siegfried; Graf, Franz; Lehmann, Wolfgang; Unkelbach, Karl-Heinz; and Dueren, Gottfried, 4,315,816, Cl. 209-223.00A.

Klockner-Werke AG: *See*—
Chitil, Manfred; and Mantey, Paul G., 4,315,772, Cl. 75-52.000.

Knifton, John F., to Texaco Inc. Preparation of ethylene glycol. 4,315,993, Cl. 518-700.000.

Knifton, John F., to Texaco Inc. Preparation of glycols and ethers. 4,315,994, Cl. 518-701.000.

Knight, Robert M.: *See*—
Hendricks, Donald B.; and Knight, Robert M., 4,316,256, Cl. 364-505.000.

Knipp, Ulrich; Ganster, Otto; and Sahler, Gerd, to Bayer Aktiengesellschaft. Pneumatic tire. 4,315,536, Cl. 152-330.00R.

Knodel, Erich R., to Walter Graf u. Co. GmbH & Co. Piston for a metering device and a method of producing same. 4,315,454, Cl. 92-170.000.

Knopp, Arthur A.: *See*—
Nash, John E.; and Knopp, Arthur A., 4,315,742, Cl. 433-86.000.

Knox, Billy B. Rug hooking stand. 4,315,645, Cl. 289-18.100.

Kobayashi, Hiroyuki; and Hashimoto, Masafumi, to Matsushita Electric Industrial Company, Limited. Light-emitting semiconductor device and method of fabricating same. 4,316,208, Cl. 357-55.000.

Kobayashi, Makio: *See*—
Senjo, Teizo; and Kobayashi, Makio, 4,315,872, Cl. 261-113.000.

Kobayashi, Shigeki: *See*—
Ueda, Setsuo; Yasuda, Takashi; Yamada, Tokuyoshi; and Kobayashi, Shigeki, 4,315,720, Cl. 425-8.000.

Koch, Jakob: *See*—
Forny, Arnold; Koch, Jakob; Niederer, Hans; and Schmid, Otto, 4,315,574, Cl. 220-72.000.

Kochi, Hiromu: *See*—
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,316,019, Cl. 544-28.000.

Koda, Minoru: *See*—
Maruyama, Teruo; Koda, Minoru; Morimoto, Masato; and Inoue, Toshitsugu, 4,316,225, Cl. 360-107.000.

Kodama, Hiroshi: *See*—
Yoshimoto, Yuichiro; and Kodama, Hiroshi, 4,315,800, Cl. 376-246.000.

Koehler, Dale R.; and Zupfer, Jerrald A., to Bulova Watch Company, Inc. Key-operated solid-state timepieces. 4,316,276, Cl. 368-70.000.

Koehler, Gerard N., to La Telemecanique Electrique. Electromagnet with a moving system and permanent magnet, especially for contactors. 4,316,167, Cl. 335-229.000.

Koehler Manufacturing Company: *See*—
Gulliksen, John E., 4,316,241, Cl. 362-268.000.

Kohlmann, Wilhelm: *See*—
Scharwaechter, Peter; Gutsche, Klaus; Kohlmann, Wilhelm; Kroemer, Gerd, deceased; Kroemer, Norma, legal representative; Kroemer, Helmut, legal representative; and Kroemer, Maria M., legal representative, 4,315,931, Cl. 424-251.000.

Koide, Toshiyuki: *See*—
Akiyama, Takeshi; Koide, Toshiyuki; and Nagasawa, Mutsuo, 4,315,966, Cl. 428-260.000.

Koike, Hidemi: *See*—
Sakudo, Noriyuki; Tokiguchi, Katsumi; Koike, Hidemi; and Kanomata, Ichiro, 4,316,090, Cl. 250-423.00R.

Kokusai Denshin Denwa Kabushiki Kaisha: *See*—
Nakagome, Yukio; and Mimura, Yoshinori, 4,315,667, Cl. 350-96.340.

Kollmorgen Technologies Corporation: *See*—
Louarn, Marcel, 4,316,130, Cl. 318-551.000.

Komine, Kikuji: *See*—
Onodera, Takashi; Komine, Kikuji; Ohashi, Fumio; and Naito, Tsutomo, 4,315,813, Cl. 208-33.000.

Komori, Yumiko: *See*—
Yamada, Isao; Ikeda, Mitsuyuki; and Komori, Yumiko, 4,316,237, Cl. 362-33.000.

Kondo, Kenshi. Solder bath apparatus. 4,315,590, Cl. 228-37.000.

Konig, Wilfried: *See*—
Hagenmaier, Hans-Paul; Konig, Wilfried; Zahner, Hans; Fiedler, Hans-Peter; Dehler, Wolfgang; Keckeisen, Adelinde; Holst, Hartwig; and Zoebelein, Gerhard, 4,315,922, Cl. 424-181.000.

Koppers Company, Inc.: *See*—
Vargo, John V., Jr., 4,315,605, Cl. 241-192.000.

Korber, Joachim; Bange, Gunter; Poll, Walter; Kaltenbach, Volker Bensberg; and Pittroff, Hans, to SKF Kugellagerfabriken GmbH. Method for the advance indication of damage to wheel bearings. 4,316,175, Cl. 340-57.000.

Koscho, Joseph G., to Libbey-Owens-Ford Company. Tilting support packing apparatus. 4,315,711, Cl. 414-97.000.

Kosek, John A.: *See*—
Bruckenstein, Stanley; and Kosek, John A., 4,315,753, Cl. 23-232.00E.

Koshelev, Jury A.: *See*—
Ivanov, Valentin A.; Khodosh, Vladimir A.; Ostrovsky, Igor S.; Shenkman, Mikhail Y.; Koshelev, Jury A.; Vlasov, Sergei N.; Pachulia, Budu P.; and Fishman, Iosif D. Y., 4,315,701, Cl. 405-150.000.

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Mann, Alexander B.; Kraeling, John B., Jr.; and Bukowski, Ronald G., 4,315,820, Cl. 210-408.000.

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Greiner, Steven P.; Marshall, Wayne E.; and Sitterly, Linda G., 4,315,946, Cl. 426-46.000.

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Hoffmann, Jurgen; and Eck, Werner, 4,315,924, Cl. 137-514.300.

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Pfuhl, Hans P. H.; Agthe, Dieter P. H.; and Kreiner, Diethard G., 4,315,879, Cl. 264-117.000.

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Kroemer, Maria M., legal representative: *See*—
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Kroemer, Norma, legal representative: *See*—
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Megerle, Friedrich; and Kruger, Jorg, 4,315,620, Cl. 266-193.000.

Krupp Polysius AG: *See*—
Grachtrup, Heinz, 4,315,439, Cl. 74-661.000.

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Khan, Muhammad A.; Kruse, Paul W., Jr.; and Ready, John F., 4,316,147, Cl. 324-300.000.

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Nakagawa, Masao, 4,315,636, Cl. 280-703.000.
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Kuchikata, Masuo; Tsuyuki, Hiroshi; Furukawa, Toshio; Nitta, Yoshihiro; and Kuyama, Hiroshi, to Tokyo Organic Chemical Industries, Ltd. Metal salt of N-substituted alkylenebisdithiocarbamic acid. 4,315,846, Cl. 260-429.900.

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Matsuura, Kazuo; Shiraishi, Takeichi; Kawamata, Etsuo; Kuroda, Nobuyuki; and Miyoshi, Mituji, 4,315,999, Cl. 526-114.000.

Kurt Manufacturing Company, Inc.: *See*—
Lenz, John D., 4,315,373, Cl. 33-174.0TD.

Kuyama, Hiroshi: *See*—
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Imhof, Rene; and Kyburz, Emilio, 4,316,030, Cl. 546-138.000.

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Kuramoto, Takeo, 4,316,142, Cl. 324-127.000.

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Koehler, Gerard N., 4,316,167, Cl. 335-229.000.
Starck, Christian, 4,316,063, Cl. 200-16.00C.

Labelle, Henri M. R. Lock bolt. 4,315,648, Cl. 292-150.000.

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Laffoon, Perry D.; and Shannon, John A. Engine starting apparatus. 4,316,095, Cl. 290-38.00R.

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Schmitt, Richard L.; Lai, Ban-Yen; and Husain, Matloob, 4,315,404, Cl. 60-690.000.

Laibowitz, Robert B.: *See*—
Broers, Alec N.; Cuomo, Jerome J.; Laibowitz, Robert B.; and Molzen, Walter W., Jr., 4,316,093, Cl. 250-492.100.

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Lamoureux, William R.: *See*—
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Landers, Perry E.: *See*—
McChesney, John M.; and Landers, Perry E., 4,315,889, Cl. 422-7.000.

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Cotman, Ronald N.; and Lanese, Gustino J., 4,316,120, Cl. 315-58.000.

Lang, Alan J. Hand gun grip with concealed fasteners. 4,315,379, Cl. 42-71.00P.

Lang, Richard D.; and Bolton, Theodore S., to Carrier Corporation. Duct attachment means for an air conditioning unit. 4,315,457, Cl. 98-40.00C.

Langer, Ernst: *See*—
Renner, Kurt; Langer, Ernst; and Eisenhut, Werner, 4,315,804, Cl. 202-263.000.

Lanning, George R.: *See*—
McLean, James D.; Alpers, Frederick C.; Lanning, George R.; and Camphausen, Fred H., 4,315,609, Cl. 244-3.140.

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Aftergut, Siegfried; Buschmann, Erwin C.; and Lao, Kenneth Q., 4,315,668, Cl. 350-343.000.

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LaRocque, Arthur G.; Whiteside, George D.; and Johnson, Bruce K., to Polaroid Corporation. Camera with auto ranging focusing and flash fire control. 4,315,676, Cl. 354-27.000.

Larrson, Karl I.; and Jakobsson, Per A. H. Method for binding and clearing animal waste products. 4,315,761, Cl. 71-21.000.

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Latasiewicz, Leonard, to Motorola, Inc. Movable printed circuit board display. 4,316,235, Cl. 361-408.000.

Lathlaen, Richard A., to TRW, Inc. Signal generating device. 4,316,110, Cl. 310-155.000.

Launie, Kenneth J., to Polaroid Corporatioa. Camera with less disc stopping system. 4,315,681, Cl. 354-197.000.

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Lechner, Ernst-Friedrich; Meusel, Otto; and Muller, Meinhardt, to Siemens Aktiengesellschaft. Hinged support for electrical devices. 4,316,236, Cl. 361-429.000.

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Ruetschi, Paul, 4,315,977, Cl. 429-233.000.

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Boileau, Sylvie L.; Lecolier, Serge L.; and Raynal, Serge F., 4,316,001, Cl. 528-14.000.

Lee, John W.; and Schrougham, Benton. Ground anchor stake device. 4,315,387, Cl. 52-156.000.

Lee, Robert G. H.: *See*—
Savard, Guy; and Lee, Robert G. H., 4,315,774, Cl. 75-74.000.

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Micallef, Lewis A., 4,315,582, Cl. 222-148.000.

Leffingwell, Edward A., to General Electric Company. Method for fabricating a rechargeable electrical cell pack having over-current protection. 4,315,364, Cl. 29-623.100.

Lehmann, Wolfgang: *See*—
Ries, Guenter; Juengst, Klaus-Peter; Foerster, Siegfried; Graf, Franz; Lehmann, Wolfgang; Unkelbach, Karl-Heinz; and Dueren, Gottfried, 4,315,816, Cl. 209-223.00A.

Leibowitz, Paul; and Weinstein, Marvin J., to Schering Corporation. Extraction of interferon from bacteria. 4,315,852, Cl. 260-112.00R.

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Church, Peter K., 4,315,828, Cl. 252-153.000.

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Lell, Rainer; Al-Muddarris, Ghazi R.; and Pachaly, Reinhard, to Davy International Aktiengesellschaft. Process for removing hydrogen sulphide and sulphur dioxide from claus tail gases. 4,315,904, Cl. 423-574.00R.

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Lemke, James U.; and French, William W., to Eastman Technology, Inc. Multitrack magnetic head employing double helix structure. 4,316,227, Cl. 360-121.000.

Lemmers, Eugene: *See—*
Hammer, Edward E.; and Lemmers, Eugene, 4,316,121, Cl. 315-62.000.

Lenke, Dieter: *See—*
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Lenz, John D., to Kurt Manufacturing Company, Inc. Machine vise protractor. 4,315,373, Cl. 33-174.0TD.

Leveckis, Algis S.: *See—*
Prosise, Robert L.; Leveckis, Algis S.; and Gunn, Charles L., 4,316,070, Cl. 219-10.55E.

LeVert, Francis E. Directional detector of changes in a local electrostatic field. 4,316,180, Cl. 340-562.000.

Levijoki, Wayne A., to General Motors Corporation. Integral mechanical and electrical vehicle speed sensor. 4,316,144, Cl. 324-174.000.

Levin, Harry P.; and Levin, Michael M., to Electric Power Research Institute, Inc. Portable phase angle meter instrument. 4,316,254, Cl. 364-481.000.

Levin, Michael M.: *See—*
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Levine, Benjamin; and Belfield, Willis J. Fishing rod extender. 4,315,612, Cl. 248-538.000.

Levine, Martin: *See—*
Drewes, William; and Levine, Martin, 4,315,514, Cl. 128-653.000.

Levine, Stephen A.: *See—*
Schlicht, Raymond C.; Levine, Stephen A.; and Chafetz, Harry, 4,315,826, Cl. 252-46.400.

Lewis, Edward J.: *See—*
Rattee, Ian D.; and Lewis, Edward J., 4,315,790, Cl. 156-230.000.

Libbey-Owens-Ford Company: *See—*
Koscho, Joseph G., 4,315,711, Cl. 414-97.000.

Licentia-Patent-Verwaltungs-G.m.b.H.: *See—*
Minner, Willy, 4,316,101, Cl. 307-578.000.
Rall, Bernhard, 4,316,135, Cl. 323-265.000.
Saxarra, Jurgen; and Pivit, Erich, 4,316,136, Cl. 323-282.000.

Lichti, Reiner, to Siemens Aktiengesellschaft. Control circuit for electromagnetically-operated recorders in teleprinting devices. 4,316,056, Cl. 178-23.00R.

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Roos, Bengt, 4,315,384, Cl. 51-267.000.

Liebig, Heinrich. Positively locking toggle. 4,315,708, Cl. 411-65.000.

Lightner, Theodore P. Combination lawn mower tool. 4,315,339, Cl. 7-138.000.

Likens, Jonas S., deceased; by Ford, Ruby L., heir; by Coulter, Mary F. L., heir; by Coulter, Pauline L., heir; and by Filson, Lucille L., heir, to Filson, Lucille L. Topical salve. 4,315,916, Cl. 424-145.000.

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Benkmann, Christian, 4,315,759, Cl. 55-18.000.

Lindmark, Richard C., Jr.: *See—*
Van Dover, Dennis W.; and Lindmark, Richard C., Jr., 4,315,878, Cl. 264-107.000.

Lindstrom, Richard S.: *See—*
Prior, William; and Lindstrom, Richard S., 4,315,967, Cl. 428-285.000.

Littleford, Sidney J.: *See—*
Monauni, Christian K.; and Littleford, Sidney J., 4,315,544, Cl. 166-214.000.

Locke, Philip F., Jr., to Westinghouse Electric Corp. Temperature compensated battery charging system with testing for battery back-up system. 4,316,133, Cl. 320-48.000.

Logemann Brothers Company: *See—*
Schmalz, Roman, 4,315,459, Cl. 100-39.000.

Login, Robert B.; and Newkirk, David D., to BASF Wyandotte Corporation. Linear saturated polyesters of phosphoric acid and halogenated diols as flame-retardant additives and coatings. 4,315,847, Cl. 260-45.7PH.

Login, Robert B.; and Newkirk, David D., to BASF Wyandotte Corporation. Linear saturated polyesters of phosphoric acid and halogenated diols as flame-retardant additives and coatings. 4,315,969, Cl. 428-395.000.

Loix, Gilbert L. Self-supporting outer metallic stairway. 4,315,389, Cl. 52-185.000.

Looker, Robert; and McLennan, Richard E., to Satron, Inc. Overcenter buckle. 4,315,350, Cl. 24-68.00R.

Lopatin, George: *See—*
Coplan, Myron J.; and Lopatin, George, 4,315,877, Cl. 264-45.900.

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Kalopissis, Gregoire; Vanlerberghe, Guy; and Sebag, Henri, 4,315,912, Cl. 424-70.000.

Lotsch, Wolfgang: *See—*
Henning, Georg; and Lotsch, Wolfgang, 4,316,023, Cl. 544-300.000.

Louarn, Marcel, to Kollmorgen Technologies Corporation. Pneumatic device to control the speed of an electric motor. 4,316,130, Cl. 318-551.000.

Lovable Italiana S.p.A.: *See—*
Bartolini, Dario, 4,315,351, Cl. 24-198.000.

Lovatt, William J., to Acme Marls Limited. Support element, upright support and support structure for supporting articles during kiln firing. 4,315,738, Cl. 432-258.000.

Lovatt, William J.: *See—*
Elliott, John; Bell, Malcolm G.; and Lovatt, William J., 4,315,737, Cl. 432-241.000.

Low, Leonard J. Scavenge pump. 4,315,565, Cl. 192-113.00B.

Luciani, Luciano: *See—*
Scata', Umberto; Luciani, Luciano; and Barbe', Pier C., 4,315,835, Cl. 252-429.00B.

Ludwig, Clifford J., Jr., to Drackett Company, The. Safety closure cap with vent. 4,315,578, Cl. 220-366.000.

Ludwig, Volker, to Siemens Aktiengesellschaft. Circuit arrangement for the automatic, adaptive distortion correction of ringings of at least three-stage base band signal. 4,316,057, Cl. 178-63.00E.

Luers, Thomas J.; and Giroux, Richard L., to Halliburton Company. Seal system for wellhead isolation tool diffuser. 4,315,543, Cl. 166-202.000.

Lugosi, Gyorgy; Simay, Antal; Bodnar, Janos; Turcsan, Istvan; Jelinek, Istvan; Somfai, Eva; and Simandi, Laszlo, to Chinoin Gyogyszer RT. Process for O-acylating phenol derivatives and acylating compositions for this purpose. 4,315,861, Cl. 260-340.90R.

Lummus Company, The: *See—*
Tsao, Utah, 4,315,802, Cl. 202-158.000.

Lurssen, Klaus: *See—*
Reiser, Wolf; Draber, Wilfried; Buchel, Karl H.; Lurssen, Klaus; Frohberger, Paul-Ernst; and Paul, Volker, 4,315,764, Cl. 71-76.000.

Lusk, George E., to Joslyn Mfg and Supply Co. Multiwedge connector. 4,315,699, Cl. 403-361.000.

Lutz, Charles W., to FMC Corportion. Preparation of granular sodium tripolyphosphate hexahydrate with low friability. 4,315,898, Cl. 423-315.000.

Lutz, Manfred, to Fichtel & Sachs AG. Securing device for doors or the like in vehicles. 4,315,649, Cl. 292-201.000.

Luu, Duc; deRivet, Philippe-Hubert; Bradley, John J.; and Franklin, Benjamin S., to Compagnie Honeywell Bull. Apparatus and method for semaphore initialization in a multiprocessing computer system for process synchronization. 4,316,245, Cl. 364-200.000.

Luy, William R., to Eaton Corporation. Resistor such as for dynamic braking of electric motors. 4,316,172, Cl. 338-280.000.

Machlett Laboratories, Incorporated, The: *See—*
Shapiro, Jonathan S.; and Holland, William P., 4,316,129, Cl. 318-313.000.

Machnik, Edward I. Hunter's seat and sling. 4,315,655, Cl. 297-118.000.

Macina, Nicola A., to RCA Corporation. Multichannel frequency translation of sampled waveforms by decimation and interpolation. 4,316,282, Cl. 370-70.000.

Mack, Anthony C.; Phillips, Robert A.; and Shumrak, George K., to Sweetheart Plastics, Inc. Food serving system. 4,316,078, Cl. 219-386.000.

Mackey, Donald; and Fox, Ernest D., to RCA Corporation. Color kinescope convergence measuring system. 4,316,211, Cl. 358-10.000.

Maclay, William P.; and Wallace, Mackenzie G., to Sandoz Ltd. Ergots and their use in treating minimal brain dysfunction. 4,315,937, Cl. 424-261.000.

MacLean, Donald L.: *See—*
King, Duane E.; Harris, Billy J.; MacLean, Donald L.; and Graham, Tommy E., 4,315,819, Cl. 210-321.300.

Madigan, Stephen M., to Danfoss A/S. Heat emitter unit for a hot water heating system. 4,315,598, Cl. 237-70.000.

Madison Creamery, Inc.: *See—*
Cramer, Glen G., 4,315,955, Cl. 426-585.000.

Maeda, Toshiyuki: *See—*
Sakamaki, Hiroshi; Maeda, Toshiyuki; Ushijima, Fumihiro; and Saitou, Tadashi, 4,315,719, Cl. 418-15.000.

Maerz Ofenbau AG: *See—*
Fussl, Erwin; and Scheibenreif, Karl, 4,315,735, Cl. 432-25.000.

Magic Chef, Inc.: *See—*
Jellies, David A., 4,315,495, Cl. 126-194.000.

Magna Corporation: *See—*
Blair, Charles M., Jr., 4,315,545, Cl. 166-274.000.

Magnabosco, Lino: *See—*
Tangorra, Giorgio; and Magnabosco, Lino, 4,315,562, Cl. 185-37.000.

Maguire, Michael J.: *See—*
Gayst, Stephen; and Maguire, Michael J., 4,315,918, Cl. 424-177.000.

Mahawili, Imad; and Boyle, Timothy J., to American Flow Systems, Inc. Electronically controlled flow meter and flow control system. 4,315,523, Cl. 137-486.000.

Mainardi, Sandro: *See—*
Vidotto, Graziano; Sellan, Febo; Bacchetta, Enzo; Mainardi, Sandro; and Benussi, Giovanni, 4,315,843, Cl. 260-29.6PT.

Maio, Kenji: *See—*
Shibayama, Akinori; Maio, Kenji; Hotta, Masao; and Yokozawa, Norio, 4,316,178, Cl. 340-347.0DA.

Makabe, Hachiro; Watanabe, Kazuo; Takenoya, Hideaki; Shomura, Eiichi; and Tonomura, Yoshinobu, to Janome Sewing Machine Co. Ltd. Electronic sewing machine. 4,315,472, Cl. 112-158.00E.

Maki, Seiichi: *See—*
Horikawa, Takahiro; Hibino, Yutaka; and Maki, Seiichi, 4,315,883, Cl. 264-174.000.

Makino, Yuji: *See—*
Sato, Masaki; Okuda, Hironori; Ito, Motoya; Makino, Yuji; Wachi, Yasuyuki; Takahashi, Noriyoshi; and Watanabe, Masatoshi, 4,316,113, Cl. 310-262.000.

Malaspina, Francis P.: *See*—
Duddy, Joseph C.; Malaspina, Francis P.; and Martini, William J., 4,315,829, Cl. 252-182.100.
Malco Products, Inc.: *See*—
Brooks, Ray G., 4,315,361, Cl. 29-432.100.
Maldarella, Antonio, Jr.: *See*—
French, David W.; Heisler, Robert W.; Maldarella, Antonio, Jr.; and Vanhoy, Gilbert W., 4,315,630, Cl. 277-207.00A.
Mallory, William R.: *See*—
Morrison, Robert W., Jr.; Mallory, William R.; and Styles, Virgil L., 4,315,932, Cl. 424-251.000.
Malueg, Richard M., to McDonnell Douglas Corporation. Optical image stabilizing system. 4,315,610, Cl. 244-3.160.
Mamourian, Armand; and Bousquet, Francois, to Rhone-Poulenc Industries. Process for the purification of wet phosphoric acid. 4,315,899, Cl. 423-321.00R.
Manassen, Joost; Hodes, Gary; and Cahen, David, to Yeda Research and Development Co., Ltd. Photoelectrochemical cell assembly having electrolyte contacts between semiconductor surfaces. 4,315,973, Cl. 429-111.000.
Mann, Alexander B.; Kraeling, John B., Jr.; and Bukowski, Ronald G., to Zurn Industries, Inc. Self-cleaning strainer. 4,315,820, Cl. 210-408.000.
Mantey, Paul G.: *See*—
Chitil, Manfred; and Mantey, Paul G., 4,315,772, Cl. 75-52.000.
Marconi Company Limited, The: *See*—
Cole, Henry W., 4,316,190, Cl. 343-6.50R.
Maritec Corporation: *See*—
Baker, Kenneth R.; and DeVault, Robert T., 4,315,749, Cl. 440-42.000.
Marker, Harry R.: *See*—
Muller, Michael; Palmer, Reed A.; and Marker, Harry R., 4,316,066, Cl. 200-670.000.
Marks, Timothy L.: *See*—
Schack, James B.; and Marks, Timothy L., 4,315,393, Cl. 52-710.000.
Marlow, John V.: *See*—
Laurie, Gordon H.; Seymour, Theodore J.; Sakauye, Randall T.; and Marlow, John V., 4,315,356, Cl. 29-5.100.
Marlowe, Frank J.: *See*—
Smith, Terrence R.; and Marlowe, Frank J., 4,316,219, Cl. 358-150.000.
Marsault, Jean-Jacques: *See*—
Pouderoux, Pierre; Marsault, Jean-Jacques; Devoucoux, Pierre; and Gerard, Roger, 4,315,528, Cl. 138-106.000.
Marshall, Wayne E.: *See*—
Greiner, Steven P.; Marshall, Wayne E.; and Sitterly, Linda G., 4,315,946, Cl. 426-46.000.
Martel, Jacques; Tessier, Jean; Demoute, Jean-Pierre; and Teche, Andre, to Roussel Uclaf. Process for the preparation of α-cyanobenzyl esters. 4,315,868, Cl. 260-465.00D.
Martel, Jacques; and Tessier, Jean, to Roussel Uclaf. Cyclopropyl-carboxylates used as nematocides. 4,315,943, Cl. 424-304.000.
Martin, Francis W.: *See*—
Hagy, Henry E.; and Martin, Francis W., 4,315,991, Cl. 501-26.000.
Martin, Timothy J., Jr. Venting and filtering mechanism for milk tank vent. 4,315,579, Cl. 220-371.000.
Martin, William J.: *See*—
Kleen, Bergert G.; Lamoureux, William R.; and Martin, William J., 4,316,123, Cl. 315-169.400.
Marting Mfg. Inc.: *See*—
Kingery, Charles A., 4,315,484, Cl. 119-53.000.
Martini, William J.: *See*—
Duddy, Joseph C.; Malaspina, Francis P.; and Martini, William J., 4,315,829, Cl. 252-182.100.
Martucci, Frank C. Multi-apartment remote time variable temperature regulator and recorder. 4,315,595, Cl. 236-46.00R.
Maruyama, Teruo; Koda, Minoru; Morimoto, Masato; and Inoue, Toshitsugu, to Matsushita Electric Industrial Co., Ltd. Rotary head assembly for magnetic recording and reproducing device. 4,316,225, Cl. 360-107.000.
Maschinenfabrik Carl Zangs Aktiengesellschaft: *See*—
Brock, Josef; and Surkamp, Paul, 4,315,530, Cl. 139-76.000.
Maschinenfabrik Rau GmbH: *See*—
Rau, Willy; and Taus, Christian, 4,315,547, Cl. 172-1.000.
Maso-Therm Corporation: *See*—
Piazza, Matthew R., 4,315,391, Cl. 52-293.000.
Mason, Charles R.; Osteen, David K.; and Vaalburg, Lawrence, to Scott Paper Company. Method of making nonwoven fabric and product made thereby having both stick bonds and molten bonds. 4,315,965, Cl. 428-198.000.
Mason, Elmer B. Permanent magnet stator for D.C. motors. 4,316,099, Cl. 310-154.000.
Mason, Elmer B. Stator for multirotor D.C. magnetic motors. 4,316,109, Cl. 310-114.000.
Mason, Robert S.: *See*—
Nawash, Michael S.; Stillman, Suzanne; and Mason, Robert S., 4,315,513, Cl. 128-348.000.
Massachusetts Institute of Technology: *See*—
Senturia, Stephen D., 4,316,140, Cl. 324-71.0SN.
Massey-Ferguson Services N.V.: *See*—
Taylor, Peter A. J.; and Hammond, George W., 4,315,971, Cl. 428-419.000.
Masubuchi, Shoji: *See*—
Ishikawa, Shozo; Masubuchi, Shoji; and Ohkawa, Shigeki, 4,315,982, Cl. 430-59.000.
Masuda, Yoshiro: *See*—
Miwa, Naoto; Masuda, Yoshiro; Kawarabuki, Seiichi; Sai, Toshiyuki; and Saito, Takao, 4,315,988, Cl. 435-221.000.
Masugi, Takashi: *See*—
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,316,019, Cl. 544-28.000.
Matas Gabalda, Carlos, to ASA S.A. Device for twisting a yarn by means of a double twist device. 4,315,397, Cl. 57-58.490.
MATO Maschinen- und Metallwarenfabrik Curt Matthaei GmbH & Co. KG: *See*—
Stolz, Hermann, 4,315,349, Cl. 24-33.00C.
Matray, Attila: *See*—
Whitehead, Howard A.; and Matray, Attila, 4,315,507, Cl. 128-287.000.
Matsuda, Michihiko: *See*—
Ishimitsu, Keiichi; Kasahara, Isamu; Yamada, Tomio; Matsuda, Michihiko; Takahashi, Hidemitsu; and Soma, Shuichi, 4,316,044, Cl. 560-105.000.
Matsuda, Setsuyuki, to Mitsubishi Denki Kabushiki Kaisha. Gas insulated transmission line having two-legged spacers disposed in a receiving structure. 4,316,052, Cl. 174-14.00R.
Matsudaira, Takayuki: *See*—
Miyamoto, Tsutomu; and Matsudaira, Takayuki, 4,316,131, Cl. 318-612.000.
Matsumoto, Mansuke: *See*—
Hatano, Yoshihiro; Ikegami, Seishi; Itoh, Kenji; and Matsumoto, Mansuke, 4,316,026, Cl. 546-5.000.
Matsumoto, Takashi, to Fujitsu Limited. V-Groove semiconductor memory device. 4,316,207, Cl. 357-41.000.
Matsumura, Akira; Endo, Akira; and Sekine, Kenji, to Hitachi, Ltd; and Nissan Motor Co., Ltd. Doppler radar vehicle speed sensing system including means for checking system operation based on the detection of low frequency Doppler frequency components. 4,316,173, Cl. 340-32.000.
Matsunaga, Kenichi: *See*—
Yoshikumi, Chikao; Fujii, Takayoshi; Fujii, Masahiko; Matsunaga, Kenichi; Oguchi, Yoshiharu; and Niimura, Koichi, 4,315,851, Cl. 260-112.00B.
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,315,921, Cl. 424-180.000.
Matsuo, Munetsugu: *See*—
Akisue, Osamu; Yamada, Teruaki; Matsuo, Munetsugu; and Uehara, Norimasa, 4,315,783, Cl. 148-12.00C.
Matsuoka, Hidekazu: *See*—
Arakawa, Seiji; Seki, Tomio; Matsuoka, Hidekazu; Harada, Hatsunori; and Ninomiya, Michinari, 4,315,914, Cl. 424-89.000.
Matsushima, Masaru: *See*—
Ujikawa, Norihisa; Nakayama, Masaharu; and Matsushima, Masaru, 4,315,997, Cl. 525-94.000.
Matsushita Electric Industrial Company, Limited: *See*—
Kobayashi, Hiroyuki; and Hashimoto, Masafumi, 4,316,208, Cl. 357-55.000.
Maruyama, Teruo; Koda, Minoru; Morimoto, Masato; and Inoue, Toshitsugu, 4,316,225, Cl. 360-107.000.
Ohji, Kenzo; Yamazaki, Osamu; Wasa, Kiyotaka; and Hayakawa, Shigeru, 4,315,960, Cl. 427-248.100.
Sekido, Satoshi; Sotomura, Tadashi; and Nakai, Muneaki, 4,315,975, Cl. 429-191.000.
Tanaka, Eiichi; and Ishibashi, Noboru, 4,315,729, Cl. 431-75.000.
Yasumoto, Yoshio; Tomimoto, Tetsuo; and Taira, Eiichi, 4,316,215, Cl. 358-37.000.
Matsushita Electronics Corporation: *See*—
Yamazaki, Haruo; Ogata, Yoshiro; and Akutsu, Hidezoh, 4,316,122, Cl. 315-74.000.
Matsuura, Kazuo; Shiraishi, Takeichi; Kawamata, Etsuo; Kuroda, Nobuyuki; and Miyoshi, Mituji, to Nippon Oil Company, Limited. Process for preparing polyolefins. 4,315,999, Cl. 526-114.000.
Matsuzawa, Yasue: *See*—
Oki, Toshikazu; Yoshimoto, Akihiro; Matsuzawa, Yasue; Inui, Taiji; Takeuchi, Tomio; and Umezawa, Hamao, 4,316,011, Cl. 536-17.00A.
Matte, Claude, to Centre National de Transfusion Sanguine. Device for centrifuging liquids containing particles or cells in suspension. 4,315,593, Cl. 233-21.000.
Mauthe, Gerhard: *See*—
Krieter, Georg-Heinz; and Mauthe, Gerhard, 4,316,051, Cl. 174-11.00R.
Maxwell Davidson Limited: *See*—
Davidson, Maxwell W., 4,315,380, Cl. 47-58.000.
Maylahn, Donald J.: *See*—
Drennan, Dennis B.; Maylahn, Donald J.; and Schleicher, Thomas R., 4,315,504, Cl. 128-149.000.
McBride, Joan: *See*—
McBride, Thomas D., 4,315,422, Cl. 72-388.000.
McBride, Thomas D., to McBride, Joan. Bender employing socket wrench means. 4,315,422, Cl. 72-388.000.
McBryde, F. Webster. Homolinear composite equal-area world projections. 4,315,747, Cl. 434-150.000.
McCabe, Garry-Owen; and Milish, William P., to Transamerica DeLaval Inc. Flow-rate transducer with electrical output. 4,315,436, Cl. 73-861.540.
McCall, John M.: *See*—
DeGeeter, Melvin J.; and McCall, John M., 4,315,930, Cl. 424-249.000.

McCallister, Robert A., to Foster Wheeler Energy Corporation. Reformer employing finned heat pipes. 4,315,893, Cl. 422-109.000.

McChesney, John M.; and Landers, Perry E., to Ashland Oil, Inc. Method of reducing leaching of cobalt from metal working tools containing tungsten carbide particles bonded by cobalt. 4,315,889, Cl. 422-7.000.

McCormick, Edward J.: *See—*
Albrecht, Charles D.; and McCormick, Edward J., 4,316,259, Cl. 364-718.000.

McDonnell Douglas Corporation: *See—*
Endter, Paul A., 4,316,278, Cl. 369-100.000.
Malueg, Richard M., 4,315,610, Cl. 244-3.160.

McEntire, James D.: *See—*
Wyatt, James W., Sr.; and McEntire, James D., 4,315,487, Cl. 123-146.50A.

McEwen, Gerald K., to Dow Chemical Company, The. Polymeric phosphonates of a cyclic phosphite and epoxide. 4,316,006, Cl. 528-398.000.

McGee, James B., to Dow Corning Corporation. Adhesion of metals to solid substrates. 4,315,970, Cl. 428-412.000.

McGlashan, Kenneth W.: *See—*
Simmons, George A.; and McGlashan, Kenneth W., 4,316,166, Cl. 335-213.000.

McGuire, John L.: *See—*
Capetola, Robert J.; and McGuire, John L., 4,315,936, Cl. 424-260.000.

McGuire, Samuel B., to Bending Products, Inc. Tube bending mandrel. 4,315,423, Cl. 72-466.000.

McLean, James D.; Alpers, Frederick C.; Lanning, George R.; and Camphausen, Fred H., to United States of America, Navy. Target locating and missile guidance system. 4,315,609, Cl. 244-3.140.

McLennan, Richard E.: *See—*
Looker, Robert; and McLennan, Richard E., 4,315,350, Cl. 24-68.00R.

McNally, Frank X., to National Mine Service Company. Process for depositing cobalt ondes on a refractory-coated platinum resistor coil. 4,315,956, Cl. 427-52.000.

McReynolds, Charles P., to Caterpillar Tractor Co. Door holder for construction vehicles and the like. 4,315,646, Cl. 292-68.000.

Mechanical Technology Incorporated: *See—*
Gray, Stanley, 4,315,359, Cl. 29-149.50A.

Meckler, Gershon. Air conditioning apparatus utilizing solar energy and method. 4,315,412, Cl. 62-179.000.

Medtronic, Inc.: *See—*
Athearn, Lee F.; and Morrissey, William J., 4,315,974, Cl. 429-181.000.

Megerle, Friedrich; and Kruger, Jorg, to Klockner-Humboldt-Deutz AG. Stack for the thermal treatment of material. 4,315,620, Cl. 266-193.000.

Meggle Milchindustrie GmbH & Co. KG: *See—*
Kuipers, Arie; and Schroder, Karl, 4,315,954, Cl. 426-583.000.
Schroder, Karl, 4,315,949, Cl. 426-334.000.

Mendoza, Luis: *See—*
Johnson, Philip, Jr.; Mendoza, Luis; and Sodaro, Donald, 4,315,596, Cl. 236-94.000.

Menell, Hans, to Continental Gummi-Werke Aktiengesellschaft. Method of producing endless drive belts. 4,315,788, Cl. 156-85.000.

Mennen, Peter M. W.: *See—*
Van Soest, Hendrikus J. J.; and Mennen, Peter M. W., 4,315,581, Cl. 222-83.000.

Mercer, Roger W.; and Hay, Louis E. Apparatus for mounting dental casts. 4,315,740, Cl. 433-63.000.

Mercier, Jean-Pierre: *See—*
Brandts Buys, Ludwig D. G.; Godard, Pierre M. J. L.; Goossens, Henri C.; Mignard, Joseph J.; Wertz, Jean-Luc H. M. F. G.; and Mercier, Jean-Pierre, 4,315,959, Cl. 427-214.000.

Merck & Co., Inc.: *See—*
Cragoe, Edward J., Jr.; Stokker, Gerald E.; and Gould, Norman P., 4,316,043, Cl. 560-53.000.
Durette, Philippe L., 4,315,913, Cl. 424-88.000.

Merger, Franz; Hutmacher, Hans-Martin; and Hagen, Helmut, to BASF Aktiengesellschaft. Preparation of α,β-unsaturated nitriles. 4,315,869, Cl. 260-465.200.

Merki, Josef; Stankowski, Hans-Werner; and Stockli, Franz, to BBC Brown, Boveri & Company, Ltd. Laminated salient field pole piece for dynamoelectric machines. 4,316,111, Cl. 310-218.000.

Merz, Jurg: *See—*
Wurster, Rudolf F.; and Merz, Jurg, 4,316,005, Cl. 528-256.000.

Messick, Walker; and Christiansen, Gerald E., to Stephen A. Young Corporation. Mixing valve. 4,315,525, Cl. 137-625.400.

Messier: *See—*
Girard, Edmond; and Rey, Robert, 4,315,403, Cl. 60-643.000.

Messmer, Andras: *See—*
Hajos, Gyorgy; Messmer, Andras; Benko, Pal; Petocz, Lujza; Gorog, Peter; and Kasoczky, Ibolya, 4,316,022, Cl. 544-184.000.

Metzeler Schaum GmbH: *See—*
Baatz, Gunther; Conrad, Klaus-Dieter; and Riemhofer, Franz, 4,315,996, Cl. 521-54.000.

Meusel, Otto: *See—*
Lechner, Ernst-Friedrich; Meusel, Otto; and Muller, Meinhardt, 4,316,236, Cl. 361-429.000.

Meyenschein, Richard, to Christ KG. Meat grinder with means for separating gristle from the ground meat. 4,315,604, Cl. 241-82.500.

Meyer, Gerald L., to Hewlett-Packard Company. Data tracking phase locked loop. 4,316,152, Cl. 331-1.00A.

Micallef, Lewis A., to Leeds and Micallef. Universal sequential dispensing pump system free of external check valves and having venting capability. 4,315,582, Cl. 222-148.000.

Micchelli, Albert L.: *See—*
Nowak, Frank A., Jr.; and Micchelli, Albert L., 4,315,910, Cl. 424-47.000.

Mich, Thomas F.; Haskell, Theodore H.; and Hutt, Marland P., Jr., to Warner-Lambert Company. Antibacterial amide compounds and pharmaceutical compositions containing the same. 4,315,933, Cl. 424-251.000.

Mich, Thomas F.: *See—*
Doub, Leonard; Haskell, Theodore H.; Mich, Thomas F.; and Schweiss, Dietrich, 4,315,858, Cl. 260-239.100.

Michel, Thomas J., to Santek, Inc. Protective transfer assembly for semiconductor devices. 4,316,231, Cl. 361-212.000.

Micro Electronics, Inc.: *See—*
Perrino, Joseph A.; and Perrino, Thomas W., 4,315,444, Cl. 76-101.00R.

MicroComm Corporation: *See—*
Hendricks, Donald B.; and Knight, Robert M., 4,316,256, Cl. 364-505.000.

Mignard, Joseph J.: *See—*
Brandts Buys, Ludwig D. G.; Godard, Pierre M. J. L.; Goossens, Henri C.; Mignard, Joseph J.; Wertz, Jean-Luc H. M. F. G.; and Mercier, Jean-Pierre, 4,315,959, Cl. 427-214.000.

Miki, Nobuaki; Sakakibara, Shiro; and Yokoyama, Fumitomo, to Aisin-Warner Kabushiki Kaisha. Governor hydraulic pressure supply apparatus for automatic transmissions. 4,315,519, Cl. 137-56.000.

Milish, William P.: *See—*
McCabe, Garry-Owen; and Milish, William P., 4,315,436, Cl. 73-861.540.

Miller, Arthur F.; Callahan, James L.; and Shaw, Wilfrid G., to Standard Oil Company. Catalyst preparation technique. 4,315,838, Cl. 252-448.000.

Miller, Franklyn D.: *See—*
Muller, Werner C.; and Miller, Franklyn D., 4,315,987, Cl. 435-162.000.

Mills, King L.: *See—*
Cheng, Paul J.; and Mills, King L., 4,315,901, Cl. 423-455.000.

Mills, Luther J., III, to Brown & Williamson Tobacco Corporation. Tobacco drying apparatus. 4,315,515, Cl. 131-303.000.

Milner, John A.: *See—*
Crosby, John; and Milner, John A., 4,316,034, Cl. 548-124.000.

Mimura, Yoshinori: *See—*
Nakagome, Yukio; and Mimura, Yoshinori, 4,315,667, Cl. 350-96.340.

Mines, Gordon L.: *See—*
Haller, Jacob S.; Mines, Gordon L.; and Mischnick, Meinert J., 4,315,367, Cl. 29-866.000.

Minner, Willy, to Licentia-Patent-Verwaltungs-G.m.b.H. Circuit for switching and transmitting alternating voltages. 4,316,101, Cl. 307-578.000.

Minnesota Mining & Manufacturing Company: *See—*
Bettenhausen, Larry A., 4,315,608, Cl. 242-68.000.
Boeder, Charles W., 4,316,000, Cl. 526-301.000.
Gasper, Alton J., 4,315,703, Cl. 405-264.000.

Minolta Camera Kabushiki Kaisha: *See—*
Shigoku, Masaharu, 4,315,670, Cl. 350-429.000.

Mischnick, Meinert J.: *See—*
Haller, Jacob S.; Mines, Gordon L.; and Mischnick, Meinert J., 4,315,367, Cl. 29-866.000.

Mishiro, Masayuki: *See—*
Isoya, Toshisuke; Mishiro, Masayuki; and Yokoshima, Naohiko, 4,316,075, Cl. 219-124.220.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Matsuda, Setsuyuki, 4,316,052, Cl. 174-14.00R.
Onishi, Masayoshi; Haruta, Yoshikatu; Sakurai, Toshiyuki; and Yamamoto, Shigemi, 4,315,493, Cl. 123-617.000.

Mitsubishi Heavy Industries Ltd.: *See—*
Kawamura, Tomotsuchi; and Haneda, Hisao, 4,315,485, Cl. 122-406.00R.

Mitsubishi Petrochemical Co., Ltd.: *See—*
Miwa, Naoto; Masuda, Yoshiro; Kawarabuki, Seiichi; Sai, Toshiyuki; and Saito, Takao, 4,315,988, Cl. 435-221.000.

Mitsui Petrochemical Industries, Ltd.: *See—*
Tomoshige, Toru; Furuta, Harumi; Tachi, Akihiro; and Kawamoto, Nobuyuki, 4,315,863, Cl. 260-346.740.
Ushida, Yoshihisa; Amimoto, Yoshikatu; Toyota, Akinori; and Kashiwa, Norio, 4,315,874, Cl. 264-5.000.

Mitsui Toatsu Chemicals Incorporated: *See—*
Murata, Sadao; and Numata, Tadanobu, 4,315,541, Cl. 165-94.000.

Miwa, Naoto; Masuda, Yoshiro; Kawarabuki, Seiichi; Sai, Toshiyuki; and Saito, Takao, to Mitsubishi Petrochemical Co., Ltd. Thermophilic collagenases, thermophilic bacteria capable of producing thermophilic collagenases, and process for producing said collagenases. 4,315,988, Cl. 435-221.000.

Miyabayashi, Susumu; and Kaji, Takeyuki, to TDK Electronics Co., Ltd. Non-linear resistance elements and method for manufacturing same. 4,316,171, Cl. 338-21.000.

Miyamoto, Tsutomu; and Matsudaira, Takayuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Control apparatus of flying shears. 4,316,131, Cl. 318-612.000.

Miyashita, Kenjiro: *See—*
Nozawa, Shinkichi; and Miyashita, Kenjiro, 4,315,900, Cl. 423-359.000.

Miyoshi, Mituji: *See*—
Matsuura, Kazuo; Shiraishi, Takeichi; Kawamata, Etsuo; Kuroda, Nobuyuki; and Miyoshi, Mituji, 4,315,999, Cl. 526-114.000.
Mizuta, Toshiaki; Abe, Takeshi; Yoshihara, Ichiro; Saito, Kazuhito; and Tsuchiya, Keishin, to Ricoh Co., Ltd. Remote meter reading system. 4,316,262, Cl. 364-900.000.
Mobil Oil Corporation: *See*—
Shihabi, David S., 4,315,814, Cl. 208-111.000.
Mocella, Michael T.: *See*—
Taylor, Paul D.; and Mocella, Michael T., 4,315,896, Cl. 423-54.000.
Mochiji, Kozo: *See*—
Okazaki, Shinji; Mochiji, Kozo; Takahashi, Susumu; and Murai, Fumio, 4,315,984, Cl. 430-296.000.
Moe, Per J.; Carling, Helge; and Eriksen, Leif H., to Odd Berg. Method for aligning two pipeline ends and apparatus for carrying out the method. 4,315,702, Cl. 405-170.000.
Moeller, Helmut, to Siemens Aktiengesellschaft. Electromagnetic relay wth add-on conductor capability. 4,316,165, Cl. 335-202.000.
Moen, Lenard E. Manufacture of H-dividers. 4,315,752, Cl. 493-171.000.
Mojden, Wallace W., to Fleetwood Systems, Inc. Magnetic rail for magnetic belt conveyor. 4,315,568, Cl. 198-690.000.
Molzen, Walter W., Jr.: *See*—
Broers, Alec N.; Cuomo, Jerome J.; Laibowitz, Robert B.; and Molzen, Walter W., Jr., 4,316,093, Cl. 250-492.100.
Monauni, Christian K.; and Littleford, Sidney J., to Baker International Corporation. Locking device for landing within a well conduit. 4,315,544, Cl. 166-214.000.
Monsanto Company: *See*—
King, Duane E.; Harris, Billy J.; MacLean, Donald L.; and Graham, Tommy E., 4,315,819, Cl. 210-321.300.
Monsterleet, Jacques G. A.: *See*—
Moreau, Philippe J.; and Monsterleet, Jacques G. A., 4,315,385, Cl. 52-80.000.
Montedison, S.p.A.: *See*—
Albizzati, Enrico; and Giannetti, Enzo, 4,315,836, Cl. 252-429.00B.
Rinaldi, Roberto; Govoni, Gabriele; and Visani, Francesco, 4,316,009, Cl. 528-502.000.
Scata', Umberto; Luciani, Luciano; and Barbe', Pier C., 4,315,835, Cl. 252-429.00B.
Vidotto, Graziano; Sellan, Febo; Bacchetta, Enzo; Mainardi, Sandro; and Benussi, Giovanni, 4,315,843, Cl. 260-29.6PT.
Mookherjee, Braja D.: *See*—
Trenkle, Robert W.; Mookherjee, Braja D.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,315,953, Cl. 426-538.000.
Moore, Earl P., Jr., to Du Pont de Nemours, E. I., and Company. Process for preparing 2,2-azobis(2,4-dimethylpentanenitrile). 4,315,856, Cl. 260-192.000.
Moore, Paul A.: *See*—
Balash, Charles M.; Hill, John R.; and Moore, Paul A., 4,315,628, Cl. 273-296.000.
Moore, Richard W.: *See*—
Cassidy, Frederick; and Moore, Richard W., 4,315,941, Cl. 424-269.000.
Moore, Robert A.; and Sundelin, Robert N., to Westinghouse Electric Corp. Wideband low triple transit delay line. 4,316,161, Cl. 333-141.000.
Moore, Robert W. Elongated igniting device. 4,315,731, Cl. 431-254.000.
Moranne, Jean-Pierre, to Societe Anonyme des Usines Chausson. Device for fixing a radiator into a vehicle particularly into a heavy-truck vehicle. 4,315,540, Cl. 165-67.000.
Moreau, Philippe J.; and Monsterleet, Jacques G. A., to Campenon Bernard Cetra & Constructions Metalliques. High-safety container. 4,315,385, Cl. 52-80.000.
Mori, Susumu, to Nippon Electric Co., Ltd. Semiconductor integrated circuit device having a Schottky barrier diode. 4,316,202, Cl. 357-15.000.
Morikawa, Nobuhide: *See*—
Yoshimura, Yoshinobu; Morikawa, Nobuhide; and Takanohashi, Kunio, 4,316,018, Cl. 544-27.000.
Morimoto, Masato: *See*—
Maruyama, Teruo; Koda, Minoru; Morimoto, Masato; and Inoue, Toshitsugu, 4,316,225, Cl. 360-107.000.
Morin, Bruno; and Thiery, Daniel, to Commissariat a l'Energie Atomique. Process for the conditioning of solid radioactive waste with large dimensions. 4,315,831, Cl. 252-628.000.
Moriyama, Aritsune: *See*—
Hayashi, Taro; and Moriyama, Aritsune, 4,315,456, Cl. 98-36.000.
Morozov, Viktor N.; Gimpelson, Ilya A.; and Bogomolov, Vladislav M. Method of determining deformation characteristics of construction materials and soil. 4,315,429, Cl. 73-84.000.
Morrison, Robert W., Jr.; Mallory, William R.; and Styles, Virgil L., to Burroughs Wellcome Co. Method of using 1H-pyrimido-4,5-c -1,2-diazepines as antibacterial and anticoccidocidal agents. 4,315,932, Cl. 424-251.000.
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Athearn, Lee F.; and Morrissey, William J., 4,315,974, Cl. 429-181.000.
Mostek Corporation: *See*—
Young, Ian A.; Hildebrand, David B.; and Johnson, Charles B., 4,316,106, Cl. 307-481.000.
Motorola, Inc.: *See*—
Balan, Isadore; and Sievers, Kirk A., 4,316,134, Cl. 322-99.000.
Dydyk, Michael, 4,316,160, Cl. 333-120.000.
Latasiewicz, Leonard, 4,316,235, Cl. 361-408.000.
Ooms, William J., 4,316,151, Cl. 331-1.00A.
Moule, David J.: *See*—
Heinecke, Rudolf A. H.; and Moule, David J., 4,315,692, Cl. 356-399.000.
Mueller, Claus D.: *See*—
Frickel, Fritz-Frieder; Franke, Albrecht; Von Philipsborn, Gerda; Mueller, Claus D.; and Lenke, Dieter, 4,315,939, Cl. 424-267.000.
Mueller, Rolf K.: *See*—
Sawatari, Takeo; Keating, Patrick N.; Steinberg, Ronald F.; and Mueller, Rolf K., 4,316,191, Cl. 343-16.00R.
Muller, Meinhardt: *See*—
Lechner, Ernst-Friedrich; Meusel, Otto; and Muller, Meinhardt, 4,316,236, Cl. 361-429.000.
Muller, Michael; Palmer, Reed A.; and Marker, Harry R., to International Telephone and Telegraph Corporation. Key switch with snap-action contact and resilient actuator. 4,316,066, Cl. 200-670.000.
Muller, Ortwin; and Stopar, Victor, to Carl Zeiss-Stiftung. Combinable apparatus for examination of the eye. 4,315,672, Cl. 351-13.000.
Muller, Werner C.; and Miller, Franklyn D., to National Distillers & Chemical Corp. Continuous fermentation process. 4,315,987, Cl. 435-162.000.
Mundi, Carta: *See*—
de Somer, Jean-Marie, 4,315,710, Cl. 414-47.000.
Murai, Fumio: *See*—
Okazaki, Shinji; Mochiji, Kozo; Takahashi, Susumu; and Murai, Fumio, 4,315,984, Cl. 430-296.000.
Murakami, Koichi: *See*—
Inuzuka, Tsuneki; Murakami, Koichi; Kurita, Kenji; and Sakamaki, Hisashi, 4,315,685, Cl. 355-14.00R.
Murata, Sadao; and Numata, Tadanobu, to Mitsui Toatsu Chemicals Incorporated; and Toyo Engineering Corporation. Device for scraping off deposits from internal surfaces of elongated tubes. 4,315,541, Cl. 165-94.000.
Murata, Seitaro. Dental elevator. 4,315,745, Cl. 433-141.000.
Murphy, Joseph E.; and Piceno, Frank, Jr., to Gilbert Plastics, Inc. Child resistant closure cap apparatus employing fulcrum action. 4,315,576, Cl. 220-282.000.
Musgrave, Daniel D. Inactive spring assembly. 4,315,378, Cl. 42-50.000.
Muterspaugh, Max W.; and Theriault, Gerald E., to RCA Corporation. IF Bandpass shaping circuits. 4,316,220, Cl. 358-196.000.
Myers, Ronald W.: *See*—
Hughes, Donald W. K.; and Myers, Ronald W., 4,315,664, Cl. 339-176.00M.
Nadkaris, Anil V., to SCM Corporation. Dispersion strengthened metals. 4,315,770, Cl. 75-0.5BC.
Nadkarni, Anil V.; Haws, Warren J.; and Whitman, Charles I., to SCM Corporation. Metal mass adapted for internal oxidation to generate dispersion strengthening. 4,315,777, Cl. 75-232.000.
Naganoma, Masanaori: *See*—
Saito, Atsunori; Naganoma, Masanaori; Iwata, Yasuhiro; and Usami, Kiyoshi, 4,316,251, Cl. 364-424.000.
Nagaoka, Shinji: *See*—
Saito, Takeo; Ishida, Hiroaki; Segawa, Takashi; Nagaoka, Shinji; and Takazawa, Yuzuru, 4,316,085, Cl. 250-204.000.
Nagasawa, Mutsuo: *See*—
Akiyama, Takeshi; Koide, Toshiyuki; and Nagasawa, Mutsuo, 4,315,966, Cl. 428-260.000.
Nagel, Arthur A., to Pfizer Inc. Cis-C_3"C_4"-carbonate derivatives of O-demethyloleandomycin and intermediates therefor. 4,316,010, Cl. 536-9.000.
Nagel, Richard A., to Pittway Corporation. Combination combustion-products detector. 4,316,184, Cl. 340-628.000.
Nagoya University: *See*—
Aoyama, Takahiko, 4,316,089, Cl. 250-385.000.
Naito, Nagayoshi: *See*—
Hiratsuka, Motoki; Tanaka, Chiaki; and Naito, Nagayoshi, 4,315,882, Cl. 264-171.000.
Naito, Okito, to Kabushiki Kaisha Suwa Seikosha. Electronic timepiece with global time zone display. 4,316,272, Cl. 368-21.000.
Naito, Takayuki: *See*—
Iimura, Seiji; Okumura, Jun; and Naito, Takayuki, 4,316,024, Cl. 544-359.000.
Naito, Tsutomo: *See*—
Onodera, Takashi; Komine, Kikuji; Ohashi, Fumio; and Naito, Tsutomo, 4,315,813, Cl. 208-33.000.
Nakada, Akira: *See*—
Uchiyama, Yasuji; Nakada, Akira; and Imamura, Akio, 4,315,451, Cl. 84-1.030.
Nakagawa, Masao, to Kubota, Ltd. Working vehicle. 4,315,636, Cl. 280-703.000.
Nakagome, Yukio; and Mimura, Yoshinori, to Kokusai Denshin Denwa Kabushiki Kaisha. Fiber for optical transmission having single crystal core. 4,315,667, Cl. 350-96.340.
Nakaho, Junichi; and Ougimoto, Takao, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Electrical circuit breaker having a bimetal plate member of rectangular configuration. 4,316,168, Cl. 337-359.000.
Nakai, Muneaki: *See*—
Sekido, Satoshi; Sotomura, Tadashi; and Nakai, Muneaki, 4,315,975, Cl. 429-191.000.
Nakajima, Takashi; and Ohno, Iwao, to Diesel Kiki Co., Ltd. Fuel injection valve. 4,315,603, Cl. 239-533.300.

Nakajima, Takayoshi; and Tomioka, Susumu, to Chisso Corporation. Process for producing composite fibers of side by side type having no crimp. 4,315,881, Cl. 264-171.000.

Nakamichi Corporation: *See*—
Nakamichi, Niro; and Kawachi, Hideo, 4,316,226, Cl. 360-109.000.

Nakamichi, Niro; and Kawachi, Hideo, to Nakamichi Corporation. Head adjustment means for a tape recorder. 4,316,226, Cl. 360-109.000.

Nakamura, Akira: *See*—
Nakaya, Takao; and Nakamura, Akira, 4,315,557, Cl. 181-168.000.

Nakamura, Norimi; Okuyama, Shigeaki; Hasegwa, Shigekazu; Katayama, Yoshiyuki; and Obe, Mituhiko, to Kubota, Ltd. Tractor with a traction load sensing device. 4,315,548, Cl. 172-430.000.

Nakamura, Zenzo, to Canon Kabushiki Kaisha. Adapter device. 4,315,679, Cl. 354-128.000.

Nakaya, Takao; and Nakamura, Akira, to Nippon Gakki Seizo Kabushiki Kaisha. Diaphragm for electro-acoustic transducer. 4,315,557, Cl. 181-168.000.

Nakayama, Masaharu: *See*—
Ujikawa, Norihisa; Nakayama, Masaharu; and Matsushima, Masaru, 4,315,997, Cl. 525-94.000.

Nakazato, Eiji, to Fuji Jukogyo Kabushiki Kaisha. Passive safety belt device for vehicles. 4,315,640, Cl. 280-808.000.

Namazu, Ryosuke: *See*—
Inagaki, Nobuhiro; Kitamura, Eiichi; and Namazu, Ryosuke, 4,316,204, Cl. 357-30.000.

Nash Engineering Company, The: *See*—
King, Stephen J., 4,315,717, Cl. 417-69.000.

Nash, John L.; and Knopp, Arthur A., to Syntex (U.S.A.) Inc. Vibratory device having tool assembly with fluid transport means. 4,315,742, Cl. 433-86.000.

Nathanson, Harvey C., to Westinghouse Electric Corp. Circuit for coupling signals from a sensor. 4,316,103, Cl. 307-304.000.

National Distillers & Chemical Corp.: *See*—
Muller, Werner C.; and Miller, Franklyn D., 4,315,987, Cl. 435-162.000.

National Mine Service Company: *See*—
McNally, Frank X., 4,315,956, Cl. 427-52.000.

National Starch and Chemical Corporation: *See*—
Nowak, Frank A., Jr.; and Micchelli, Albert L., 4,315,910, Cl. 424-47.000.

National Steel Corporation: *See*—
Wilson, Walter A., 4,315,421, Cl. 72-42.000.

Nawash, Michael S.; Stillman, Suzanne; and Mason, Robert S. Gastrostomy and other percutaneous transport tubes. 4,315,513, Cl. 128-348.000.

NCR Canada Ltd. - NCR Canada LTEE: *See*—
Subramaniam, Ambati, 4,316,222, Cl. 358-261.000.

Neckers, Douglas C.; Blossey, Erich C.; and Schaap, A. Paul, to Research Corporation. Polymer-bound photosensitizing catalysts. 4,315,998, Cl. 525-332.000.

Nelson Industries, Inc.: *See*—
Jaisinghani, Rajan A., 4,315,822, Cl. 210-794.000.

Nelson, Thomas M.: *See*—
Frascara, Jorge; Jungkind, Walter; Ladan, Carol J.; and Nelson, Thomas M., 4,315,748, Cl. 434-159.000.

Neroda, Thomas H.; and Hollis, Roger E., to Scott & Fetzer Co., The. Double insulated vacuum motor assembly. 4,315,343, Cl. 15-339.000.

Neszmelyi, Erzsebet: *See*—
Takacs, Istvan; Kerey, Gyorgy; Illes, Janos; Rudolf, Peter; Gere, Pal; Czebe, Laszlo; and Neszmelyi, Erzsebet, 4,315,923, Cl. 424-183.000.

New England Medical Center, Inc.: *See*—
Corden, Brian J., 4,315,942, Cl. 424-295.000.

New England Nuclear Corporation: *See*—
Gelder, Frank B., 4,315,906, Cl. 424-1.000.

Newkirk, David D.: *See*—
Login, Robert B.; and Newkirk, David D., 4,315,847, Cl. 260-45.7PH.
Login, Robert B.; and Newkirk, David D., 4,315,969, Cl. 428-395.000.

Newton, Roger A. Enclosure for protecting instruments against adverse environments. 4,315,432, Cl. 73-431.000.

Niederer, Hans: *See*—
Forny, Arnold; Koch, Jakob; Niederer, Hans; and Schmid, Otto, 4,315,574, Cl. 220-72.000.

Niederost, Werner A., to Cerberus Ltd. Connection apparatus for a fire alarm. 4,315,594, Cl. 340-693.000.

Nielsen, Thomas D. Method and apparatus to effect a fine grain size in continuous cast metals. 4,315,538, Cl. 164-488.000.

Niimura, Koichi: *See*—
Yoshikumi, Chikao; Fujii, Takayoshi; Fujii, Masahiko; Matsunaga, Kenichi; Oguchi, Yoshiharu; and Niimura, Koichi, 4,315,851, Cl. 260-112.00B.

Nikles, Erwin, to Ciba-Geigy Corporation. 1,3,5-Triazines containing at least one piperidine radical. 4,315,859, Cl. 260-243.300.

Ninomiya, Michinari: *See*—
Arakawa, Seiji; Seki, Tomio; Matsuoka, Hidekazu; Harada, Hatsunori; and Ninomiya, Michinari, 4,315,914, Cl. 424-89.000.

Nippon Electric Co., Ltd.: *See*—
Mori, Susumu, 4,316,202, Cl. 357-15.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Nakaya, Takao; and Nakamura, Akira, 4,315,557, Cl. 181-168.000.
Uchiyama, Yasuji; Nakada, Akira; and Imamura, Akio, 4,315,451, Cl. 84-1.030.

Nippon Oil Company, Limited: *See*—
Matsuura, Kazuo; Shiraishi, Takeichi; Kawamata, Etsuo; Kuroda, Nobuyuki; and Miyoshi, Mituji, 4,315,999, Cl. 526-114.000.
Tsuchiya, Shozo; Oshima, Akio; and Hayashi, Hideo, 4,315,842, Cl. 260-28.50B.

Nippon Oil and Fats Company, Limited: *See*—
Hattori, Katsuhide; Fukatsu, Yoshiaki; and Takahashi, Masao, 4,315,784, Cl. 149-2.000.
Hattori, Katsuhide; Fukatsu, Yoshiaki; and Takahashi, Masao, 4,315,787, Cl. 149-2.000.
Ujikawa, Norihisa; Nakayama, Masaharu; and Matsushima, Masaru, 4,315,997, Cl. 525-94.000.

Nippon Piston Ring Co., Ltd.: *See*—
Sakamaki, Hiroshi; Maeda, Toshiyuki; Ushijima, Fumihiro; and Saitou, Tadashi, 4,315,719, Cl. 418-15.000.

Nippon Shokubai Kagaku Kogyo, Co., Ltd.: *See*—
Ozaki, Yukinori; and Soda, Hidemi, 4,315,964, Cl. 428-182.000.

Nippon Soda Company Limited: *See*—
Ishimitsu, Keiichi; Kasahara, Isamu; Yamada, Tomio; Matsuda, Michihiko; Takahashi, Hidemitsu; and Soma, Shuichi, 4,316,044, Cl. 560-105.000.

Nippon Soken, Inc.: *See*—
Akita, Sigeyuki; and Tanaka, Hiroaki, 4,316,158, Cl. 331-111.000.

Nippon Steel Corporation: *See*—
Akisue, Osamu; Yamada, Teruaki; Matsuo, Munetsugu; and Uehara, Norimasa, 4,315,783, Cl. 148-12.00C.

Nippon Telegraph & Telephone Public Corp.: *See*—
Shibayama, Akinori; Maio, Kenji; Hotta, Masao; and Yokozawa, Norio, 4,316,178, Cl. 340-347.0DA.
Tokunaga, Yukio; Sugiyama, Kiyoshi; and Seto, Tadao, 4,315,643, Cl. 282-27.500.

Nippondenso Co., Ltd.: *See*—
Saito, Atsunori; Naganoma, Masanaori; Iwata, Yasuhiro; and Usami, Kiyoshi, 4,316,251, Cl. 364-424.000.

Nishiguchi, Fumio; Ueno, Masataka; and Kimura, Masanobu, to Nissan Motor Company, Limited. Diffuser for fluid impelling device. 4,315,715, Cl. 415-207.000.

Nishizawa, Jun-ichi, to Zaidan Hojin Handotai Kenkyu Shinkokai. Crystal growth of compound semiconductor mixed crystals under controlled vapor pressure. 4,315,796, Cl. 156-614.000.

Nissan Motor Co., Ltd.: *See*—
Hideshima, Keiji; Koyanagi, Haruo; Suda, Hiroharu; Sawano, Hirokazu; Takaki, Masaoki; Yamanaka, Kunio; Yasuda, Isao; and Asada, Kazuyoshi, 4,316,260, Cl. 364-900.000.
Matsumura, Akira; Endo, Akira; and Sekine, Kenji, 4,316,173, Cl. 340-32.000.
Nishiguchi, Fumio; Ueno, Masataka; and Kimura, Masanobu, 4,315,715, Cl. 415-207.000.
Takahashi, Kotei; Endo, Teruo; Kawaguchi, Masayuki; and Sakamoto, Kenichi, 4,315,698, Cl. 403-59.000.

Niswonger, John O.: *See*—
Rowbottam, Francis W.; Skinner, Nathan L.; Niswonger, John O.; and Wadler, Milt, 4,315,732, Cl. 431-344.000.

Nitsch, Wilhelm: *See*—
Fergg, Berthold; Nitsch, Wilhelm; and Pflugbeil, Mathias, 4,315,686, Cl. 355-38.000.

Nitta, Yoshihiro: *See*—
Kuchikata, Masuo; Tsuyuki, Hiroshi; Furukawa, Toshio; Nitta, Yoshihiro; and Kuyama, Hiroshi, 4,315,846, Cl. 260-429.900.

Noack, Fritz, to Emil Pester GmbH Verpackungsmaschinen. Wrap-around packaging machine. 4,315,394, Cl. 53-553.000.

Noguchi, Koichi, to Ricoh Company, Ltd. Power supply for a flash tube. 4,316,125, Cl. 315-241.00R.

Nomura, Hirokazu: *See*—
Imada, Kiyoshi; Ueno, Susumu; and Nomura, Hirokazu, 4,315,808, Cl. 204-169.000.

Nomura, Hiroshi: *See*—
Tadokoro, Tomoo; Okimoto, Haruo; Honda, Yasuo; Nomura, Hiroshi; and Yoshimura, Masato, 4,315,489, Cl. 123-213.000.

Noorlander, Daniel O. Teat cups for milking machines. 4,315,480, Cl. 119-14.490.

Northern Telecom Limited: *See*—
Toth, Arpad G., 4,316,059, Cl. 179-1.0CN.

Nott, Frederick J.: *See*—
Waldron, John M.; Nott, Frederick J.; Harrison, Laurence C.; Johnson, Graham D.; and Green, Malcolm D., 4,316,112, Cl. 310-258.000.

Nowak, Frank A., Jr.; and Micchelli, Albert L., to National Starch and Chemical Corporation. Aerosol hair spray compositions. 4,315,910, Cl. 424-47.000.

Nozawa, Shinkichi; and Miyashita, Kenjiro, to Toyo Engineering Corporation. Integrated process for the production of methanol and ammonia. 4,315,900, Cl. 423-359.000.

Numata, Tadanobu: *See*—
Murata, Sadao; and Numata, Tadanobu, 4,315,541, Cl. 165-94.000.

Numazawa, Akio; and Katayama, Nobuaki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Synchro-mesh type gear transmission. 4,315,564, Cl. 192-53.00F.

N.V. Trimetal Paint Co.: *See*—
Brandts Buys, Ludwig D. G.; Godard, Pierre M. J. L.; Goossens, Henri C.; Mignard, Joseph J.; Wertz, Jean-Luc H. M. F. G.; and Mercier, Jean-Pierre, 4,315,959, Cl. 427-214.000.

Obe, Mituhiko: *See*—
Nakamura, Norimi; Okuyama, Shigeaki; Hasegwa, Shigekazu; Katayama, Yoshiyuki; and Obe, Mituhiko, 4,315,548, Cl. 172-430.000.

Oberlinner, Andreas: *See*—
Baumann, Hans; and Oberlinner, Andreas, 4,316,027, Cl. 546-15.000.
Occidental Oil Shale, Inc.: *See*—
Burton, Robert S., III, 4,315,657, Cl. 299-2.000.
Occidental Research Corporation: *See*—
Sadhukhan, Pasupati, 4,315,402, Cl. 60-641.300.
Oce-Nederland B.V.: *See*—
Breuers, Theo P. C.; and Hanegraaf, Johannes P., 4,315,687, Cl. 355-75.000.
Van Soest, Hendrikus J. J.; and Mennen, Peter M. W., 4,315,581, Cl. 222-83.000.
"Octropa" B.V. Internationale Octrooi Maatschappij: *See*—
Danne, Friedrich A., 4,315,571, Cl. 206-312.000.
Odd Berg: *See*—
Moe, Per J.; Carling, Helge; and Eriksen, Leif H., 4,315,702, Cl. 405-170.000.
Odle, Robert R.; Berry, Milton E.; Brunson, William W.; Burson, William R.; Cofer, Daniel B.; and Richards, Roy, to Southwire Company. Continuous melting and refining of secondary and/or blister copper. 4,315,775, Cl. 75-76.000.
Oetiker, Hans. Mechanical lock for clamps. 4,315,348, Cl. 24-20.0CW.
Off, Joseph W. A.; and Early, Judson H., to Haggar Company. Apparatus for implanting pockets. 4,315,793, Cl. 156-443.000.
Officine Savio S.p.A.: *See*—
Pfeifer, Hermann; and Zurcher, Erwin, 4,315,399, Cl. 57-302.000.
Ogaki, Mitsuo: *See*—
Takagi, Masatomo; Ogaki, Mitsuo; and Hikita, Sadao, 4,316,234, Cl. 361-342.000.
Ogata, Yoshiro: *See*—
Yamazaki, Haruo; Ogata, Yoshiro; and Akutsu, Hidezoh, 4,316,122, Cl. 315-74.000.
Oguchi, Yoshiharu: *See*—
Yoshikumi, Chikao; Fujii, Takayoshi; Fujii, Masahiko; Matsunaga, Kenichi; Oguchi, Yoshiharu; and Niimura, Koichi, 4,315,851, Cl. 260-112.00B.
Ohashi, Fumio: *See*—
Onodera, Takashi; Komine, Kikuji; Ohashi, Fumio; and Naito, Tsutomo, 4,315,813, Cl. 208-33.000.
Ohdomari, Iwao: *See*—
Ho, Paul S.; Koster, Uwe; Kuan, Tung-Sheng; Ohdomari, Iwao; and Reisman, Arnold, 4,316,209, Cl. 357-67.000.
Ohhara, Minoru: *See*—
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,315,921, Cl. 424-180.000.
Ohji, Kenzo; Yamazaki, Osamu; Wasa, Kiyotaka; and Hayakawa, Shigeru, to Matsushita Electric Industrial Co., Ltd. Method of making a thin film. 4,315,960, Cl. 427-248.100.
Ohkawa, Shigeki: *See*—
Ishikawa, Shozo; Masubuchi, Shoji; and Ohkawa, Shigeki, 4,315,982, Cl. 430-59.000.
Ohmi, Kazuaki: *See*—
Sadamatsu, Shigeru; Yamamoto, Kohichi; and Ohmi, Kazuaki, 4,315,980, Cl. 430-58.000.
Ohmura, Yoshio: *See*—
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, 4,315,921, Cl. 424-180.000.
Ohno, Iwao: *See*—
Nakajima, Takashi; and Ohno, Iwao, 4,315,603, Cl. 239-533.300.
Ohtomo, Atushi, to Tokyo Shibaura Denki Kabushiki Kaisha. Steam valve of turbine system in power generating plant. 4,315,526, Cl. 137-630.140.
Oka, Ken K.; and Kulak, John, to Deere & Company. Shield and deflector means for orchard implement. 4,315,396, Cl. 56-320.100.
Okazaki, Shinji; Mochiji, Kozo; Takahashi, Susumu; and Murai, Fumio, to Hitachi, Ltd. Method of producing a semiconductor device. 4,315,984, Cl. 430-296.000.
Oki, Toshikazu; Yoshimoto, Akihiro; Matsuzawa, Yasue; Inui, Taiji; Takeuchi, Tomio; and Umezawa, Hamao, to Sanraku-Ocean Co., Ltd. Rhodomycin antibiotics. 4,316,011, Cl. 536-17.00A.
Okimoto, Haruo: *See*—
Tadokoro, Tomoo; and Okimoto, Haruo, 4,315,488, Cl. 123-213.000.
Tadokoro, Tomoo; Okimoto, Haruo; Honda, Yasuo; Nomura, Hiroshi; and Yoshimura, Masato, 4,315,489, Cl. 123-213.000.
Okuda, Hironori: *See*—
Sato, Masaki; Okuda, Hironori; Ito, Motoya; Makino, Yuji; Wachi, Yasuyuki; Takahashi, Noriyoshi; and Watanabe, Masatoshi, 4,316,113, Cl. 310-262.000.
Okuma, Shigeru: *See*—
Hayashi, Hideyuki; and Okuma, Shigeru, 4,315,563, Cl. 188-73.100.
Okumura, Jun: *See*—
Iimura, Seiji; Okumura, Jun; and Naito, Takayuki, 4,316,024, Cl. 544-359.000.
Okuyama, Shigeaki: *See*—
Nakamura, Norimi; Okuyama, Shigeaki; Hasegwa, Shigekazu; Katayama, Yoshiyuki; and Obe, Mituhiko, 4,315,548, Cl. 172-430.000.
Olin Corporation: *See*—
Evrard, Thomas O., 4,315,762, Cl. 71-27.000.
Kircher, Morton S., 4,315,810, Cl. 204-257.000.
Kircher, Morton S., 4,315,811, Cl. 204-279.000.
Oliver, Ronald N. Retained key double cylinder deadbolt. 4,315,420, Cl. 70-379.00R.
Ollinger, Janet, to Rohm and Haas Company. Phosphorodiamidothioates. 4,315,870, Cl. 260-947.000.
Olshevsky, Udi: *See*—
Fridlender, Bertold; Ben-Moyal, Zohar; Olshevsky, Udi; and Tirosh, Regine, 4,315,907, Cl. 424-1.000.
Olson, Warren E.: *See*—
Schmaling, Roderick N.; and Olson, Warren E., 4,315,683, Cl. 355-8.000.
Olsson, Billy E., to AMP, Inc. Multiple position brush connector. 4,315,663, Cl. 339-97.00P.
Olympus Optical Co., Ltd.: *See*—
Fujii, Toru, 4,315,669, Cl. 350-426.000.
Sakurada, Masahiko, 4,315,891, Cl. 422-64.000.
Tsunefuji, Katsuhiko, 4,315,678, Cl. 354-51.000.
Onishi, Masayoshi; Haruta, Yoshikatu; Sakurai, Toshiyuki; and Yamamoto, Shigemi, to Mitsubishi Denki Kabushiki Kaisha. Internal combustion engine ignition device. 4,315,493, Cl. 123-617.000.
Ono, Keiichi: *See*—
Katsube, Junki; Ono, Keiichi; and Kawakami, Hajime, 4,316,028, Cl. 546-51.000.
Onodera, Takashi; Komine, Kikuji; Ohashi, Fumio; and Naito, Tsutomo, to Toa Nenryo Kogyo Kabushiki Kaisha. Solvent dewaxing waxy hydrocarbon oils using dewaxing aid. 4,315,813, Cl. 208-33.000.
Ooms, William J., to Motorola, Inc. Phase locked loop frequency synthesizer using multiple dual modulus prescalers. 4,316,151, Cl. 331-1.00A.
Optische Werke G. Rodenstock: *See*—
Guilino, Gunther; and Barth, Rudolf, 4,315,673, Cl. 351-169.000.
Orban, Joseph N. Stud tensioning device. 4,315,446, Cl. 81-57.380.
Ortho Pharmaceutical Corporation: *See*—
Capetola, Robert J.; and McGuire, John L., 4,315,936, Cl. 424-260.000.
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Tsuchiya, Shozo; Oshima, Akio; and Hayashi, Hideo, 4,315,842, Cl. 260-28.50B.
Oshita, Hirofumi: *See*—
Kosuge, Yoshiaki; Yoshida, Ryo; Sumida, Seizo; Oshita, Hirofumi; Otsuki, Soji; and Kamoshita, Katsuzo, 4,315,768, Cl. 71-98.000.
Osteen, David K.: *See*—
Mason, Charles R.; Osteen, David K.; and Vaalburg, Lawrence, 4,315,965, Cl. 428-198.000.
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Ostrander, William J., to Chevron Research Company. Method for interpreting events of seismic records to yield indications of gaseous hydrocarbons. 4,316,267, Cl. 367-68.000.
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Ivanov, Valentin A.; Khodosh, Vladimir A.; Ostrovsky, Igor S.; Shenkman, Mikhail Y.; Koshelev, Jury A.; Vlasov, Sergei N.; Pachulia, Budu P.; and Fishman, Iosif D. Y., 4,315,701, Cl. 405-150.000.
Otsuki, Soji: *See*—
Kosuge, Yoshiaki; Yoshida, Ryo; Sumida, Seizo; Oshita, Hirofumi; Otsuki, Soji; and Kamoshita, Katsuzo, 4,315,768, Cl. 71-98.000.
Ougimoto, Takao: *See*—
Nakaho, Junichi; and Ougimoto, Takao, 4,316,168, Cl. 337-359.000.
Overly, Carl G.: *See*—
Randall, Stephen E.; and Overly, Carl G., 4,315,395, Cl. 56-10.100.
Owens-Illinois, Inc.: *See*—
Bradley, Ronald W.; Carl, David G.; and Keating, Bernard L., 4,315,573, Cl. 215-12.00R.
Ozaki, Yukinori; and Soda, Hidemi, to Nippon Shokubai Kagaku Kogyo, Co., Ltd. Glass fiber reinforced resin laminate and a process for the manufacture thereof. 4,315,964, Cl. 428-182.000.
Pachaly, Reinhard: *See*—
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Ivanov, Valentin A.; Khodosh, Vladimir A.; Ostrovsky, Igor S.; Shenkman, Mikhail Y.; Koshelev, Jury A.; Vlasov, Sergei N.; Pachulia, Budu P.; and Fishman, Iosif D. Y., 4,315,701, Cl. 405-150.000.
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Paget, Charles J.: *See*—
Eli Lilly and Company; Paget, Charles J.; and Wikel, James H., 4,316,021, Cl. 544-139.000.
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Kovacs, Ferenc; Andor, Akos; and Palagyi, Tivadar, 4,315,915, Cl. 424-143.000.
Palmer, Jan T., to U.S. Philips Corporation. Method of manufacturing microminiature solid state devices. 4,315,366, Cl. 29-854.000.
Palmer, Reed A.: *See*—
Muller, Michael; Palmer, Reed A.; and Marker, Harry R., 4,316,066, Cl. 200-670.000.
Palmer, Stuart B.; and Primavesi, Gregory J., to Bestobell Mobrey Limited. Liquid level sensor. 4,316,183, Cl. 340-621.000.

Palmer, Walter E.: *See—*
Gallant, Stuart L.; Caron, Paul R.; Dunn, Stanley M.; Palmer, Walter E.; Schmitt, Ernest G.; and Taddeo, Michael, 4,316,249, Cl. 364-417.000.

Palmieri, Angelo, to Carle & Montanari S.p.A. Device for the quick splicing of paper webs. 4,315,794, Cl. 156-504.000.

Pape, Erwin, to Volkswagenwerk Aktiengesellschaft. Carburetor control device for carburetors in internal-combustion engines. 4,315,871, Cl. 261-65.000.

Park, Ronald Frederick: *See—*
Scheidler, Raymond T., 4,315,483, Cl. 119-51.110.

Parker, Alan; and Farnhill, William M., to Platt Saco Lowell Ltd. Open-end spinning apparatus. 4,315,398, Cl. 57-58.950.

Partridge, Joshua J. Drain pan for radiators and cooling systems. 4,315,561, Cl. 184-106.000.

Parzanici, Remo E., to International Business Machines Corporation. Xerographic toner fixing station. 4,315,682, Cl. 355-3.0FU.

Pasternak, Anthony W.: *See—*
Dosi, Mahendra K.; James, Douglas J.; and Pasternak, Anthony W., 4,316,157, Cl. 372-59.000.

Pastor, Ricardo C.; and Devor, Donald P., to Hughes Aircraft Company. Process for increasing laser crystal fluorescence yield by controlled atmosphere processing. 4,315,832, Cl. 252-301.40R.

Patel, Jitendra G.; Sandstrom, William A.; and Tarman, Paul B., to Institute of Gas Technology. Process for the production of fuel gas from coal. 4,315,758, Cl. 48-197.00R.

Patterson, Edwin A.: *See—*
Ritter, Don D.; Patterson, Edwin A.; and Pigg, Henry M., 4,315,587, Cl. 227-67.000.

Paul, Volker: *See—*
Reiser, Wolf; Draber, Wilfried; Buchel, Karl H.; Lurssen, Klaus; Frohberger, Paul-Ernst; and Paul, Volker, 4,315,764, Cl. 71-76.000.

Pawlowski, Jean, to Union Siderurgique du nord et de L'est de la France ("USINOR"). Machine for splitting slabs by oxygen-cutting. 4,315,618, Cl. 266-69.000.

Payne, Beverly F.: *See—*
Edelman, Seymour; and Payne, Beverly F., 4,315,433, Cl. 73-517.00R.

Pearsall, Wally. Dual purpose coat. 4,315,334, Cl. 2-85.000.

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Greener, Brian; and Pedder, Simon J., 4,315,566, Cl. 193-37.000.

Peiffer, Dennis G.; and Deckman, Harry W., to University of Rochester, The. Colloidal coating for small three dimensional articles, and particularly for fusion targets having glass shells. 4,315,958, Cl. 427-214.000.

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Black, John W., 4,315,727, Cl. 425-563.000.

Peppers, James M., to Gearhart Industries, Inc. Chemical pipe cutter with exponential spacing between reactant stages. 4,315,797, Cl. 156-654.000.

Perkins, Charles V.; and Firth, John R., to Pye Electronic Products Limited. Cam and follower arrangement. 4,315,691, Cl. 356-331.000.

Perrino, Joseph A.; and Perrino, Thomas W., to Micro Electronics, Inc. Method of manufacture of blade members for wire stripping device. 4,315,444, Cl. 76-101.00R.

Perrino, Thomas W.: *See—*
Perrino, Joseph A.; and Perrino, Thomas W., 4,315,444, Cl. 76-101.00R.

Perrot, Jacques, to Societe D'Etudes Scientifiques et Industrielles. Novel medicament based on aspirin and heptaminol. 4,315,924, Cl. 424-233.000.

Petitpierre, Jean C., to Ciba-Geigy Corporation. Benzopyranothiazoles. 4,316,036, Cl. 548-153.000.

Petocz, Lujza: *See—*
Hajos, Gyorgy; Messmer, Andras; Benko, Pal; Petocz, Lujza; Gorog, Peter; and Kasoczky, Ibolya, 4,316,022, Cl. 544-184.000.

Petroleum Meter & Pump Co., Inc.: *See—*
Stephenson, Tom, 4,315,438, Cl. 74-352.000.

Petrolite Corporation: *See—*
Quinlan, Patrick M., 4,316,007, Cl. 528-405.000.

Pfaff, Maurice E.: *See—*
Baralle, Roger M.; Compere, Marcel A.; Pfaff, Maurice E.; and Goumont, Claude G., 4,315,986, Cl. 430-411.000.

Pfeifer, George F.: *See—*
Colangelo, Dominick; Pfeifer, George F.; and Schumacher, Gary B., 4,316,242, Cl. 363-21.000.

Pfeifer, Hermann; and Zurcher, Erwin, to Officine Savio S.p.A. Procedure for cleaning a rotor of a spinning unit of the open-end type. 4,315,399, Cl. 57-302.000.

Pfeiffer, Aloysius T.: *See—*
Castellani, Eugene E.; Croll, Ian M.; Pfeiffer, Aloysius T.; and Romankiw, Lubomyr T., 4,315,985, Cl. 430-314.000.

Pfizer Inc.: *See—*
Nagel, Arthur A., 4,316,010, Cl. 536-9.000.

Pflugbeil, Mathias: *See—*
Fergg, Berthold; Nitsch, Wilhelm; and Pflugbeil, Mathias, 4,315,686, Cl. 355-38.000.

Pfuhl, Hans P. H.; Agthe, Dieter P. H.; and Kreiner, Diethard G. Process for preparing starting materials to form a ceramic composition. 4,315,879, Cl. 264-117.000.

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Phillips, Dougald S. M.; Phillips, Carol L. E.; and Phillips, David L. D., 4,316,232, Cl. 361-232.000.

Phillips, David L. D.: *See—*
Phillips, Dougald S. M.; Phillips, Carol L. E.; and Phillips, David L. D., 4,316,232, Cl. 361-232.000.

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Phillips, James G., to Honeywell Inc. Cluster core assembly for electroplating radioactive sources for an ionization smoke detector. 4,315,809, Cl. 204-224.00R.

Phillips Petroleum Co.: *See—*
Austin, Oliver K., 4,315,894, Cl. 422-151.000.
Cheng, Paul J.; and Mills, King L., 4,315,901, Cl. 423-455.000.
Dilbert, Meredith N., 4,315,902, Cl. 423-456.000.
Jensen, Bruce A., 4,316,255, Cl. 364-501.000.
Kay, Arthur H.; and Dziewulski, Ted, 4,315,382, Cl. 47-66.000.

Phillips, Robert A.: *See—*
Mack, Anthony C.; Phillips, Robert A.; and Shumrak, George K., 4,316,078, Cl. 219-386.000.

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Greenwood, William S.; Kuo, Ted L. C.; and Piasecki, Raymond F., 4,315,662, Cl. 339-97.00C.

Piazza, Matthew R., to Maso-Therm Corporation. Composite wall structure and process therefor. 4,315,391, Cl. 52-293.000.

Piceno, Frank, Jr.: *See—*
Murphy, Joseph E.; and Piceno, Frank, Jr., 4,315,576, Cl. 220-282.000.

Pidcock, Anthony; Close, Desmond; and To Kwan, William C., to Rolls-Royce Limited. Combustion apparatus. 4,315,405, Cl. 60-752.000.

Pigford, James W.; and Green, Carolyn J. Method and tool for placing beads on a braid of hair. 4,315,362, Cl. 29-433.000.

Pigg, Henry M.: *See—*
Ritter, Don D.; Patterson, Edwin A.; and Pigg, Henry M., 4,315,587, Cl. 227-67.000.

Pilla, Arthur A.: *See—*
Ryaby, John P.; and Pilla, Arthur A., 4,315,503, Cl. 128-1.500.

Pipaud, Lucien M. A., to Societe de Recherches et de Perfectionnements Industriels et Etablissements H. Morin-Secretan. Apparatus and method for selecting from coins or tokens. 4,315,567, Cl. 194-101.000.

Pitkjaan, Elam; and Endler, James F., to Westinghouse Electric Corp. Inner lamp mount assembly for vehicular headlamp and similar lighting apparatus. 4,316,240, Cl. 362-267.000.

Pitler, Richard K., to Allegheny Ludlum Steel Corporation. Method of producing light gage metallic strip material. 4,315,776, Cl. 75-208.00R.

Pitney Bowes Inc.: *See—*
Schmaling, Roderick N.; and Olson, Warren E., 4,315,683, Cl. 355-8.000.

Pittroff, Hans: *See—*
Korber, Joachim; Bange, Gunter; Poll, Walter; Kaltenbach, Volker Bensberg; and Pittroff, Hans, 4,316,175, Cl. 340-57.000.

Pittsburgh Environmental and Energy Systems, Inc.: *See—*
Bramer, Henry C.; and Shapiro, Edward, 4,315,895, Cl. 422-171.000.

Pittway Corporation: *See—*
Nagel, Richard A., 4,316,184, Cl. 340-628.000.

Pivit, Erich: *See—*
Saxarra, Jurgen; and Pivit, Erich, 4,316,136, Cl. 323-282.000.

Plath, Peter; Wuerzer, Bruno; and Rohr, Wolfgang, to BASF Aktiengesellschaft. Substituted 3-aminopyrazoles. 4,316,039, Cl. 548-362.000.

Plath, Peter; Rohr, Wolfgang; Wuerzer, Bruno; and Becker, Rainer, to BASF Aktiengesellschaft. 4-Methoxycarbonyl-pyrazole ether derivatives. 4,316,040, Cl. 548-377.000.

Platt Saco Lowell Ltd.: *See—*
Parker, Alan; and Farnhill, William M., 4,315,398, Cl. 57-58.950.

Poisson, Regis: *See—*
Bouge, Gilbert; Jacques, Roland; Poisson, Regis; and Seigneurin, Laurent, 4,315,839, Cl. 252-448.000.

Polaroid Corporation: *See—*
Johnson, Bruce K., 4,315,675, Cl. 354-26.000.
Johnson, Bruce K.; and Whiteside, George D., 4,315,677, Cl. 354-49.000.
LaRocque, Arthur G.; Whiteside, George D.; and Johnson, Bruce K., 4,315,676, Cl. 354-27.000.
Launie, Kenneth J., 4,315,681, Cl. 354-197.000.

Poler, Stanley. Intraocular lens. 4,315,336, Cl. 3-13.000.

Poleschuk, Nicholas: *See—*
Cass, Louis G.; Poleschuk, Nicholas; and Purdy, Samuel, 4,316,239, Cl. 362-155.000.

Poll, Walter: *See—*
Korber, Joachim; Bange, Gunter; Poll, Walter; Kaltenbach, Volker Bensberg; and Pittroff, Hans, 4,316,175, Cl. 340-57.000.

Popov, Nikolay T.: *See—*
Semerdjiev, Stefan G.; and Popov, Nikolay T., 4,315,726, Cl. 425-560.000.

Popper Engineering Ltd.: *See—*
Popper, Jakhin B., 4,315,817, Cl. 209-315.000.

Popper, Jakhin B., to Popper Engineering Ltd. Vibrating surface apparatus. 4,315,817, Cl. 209-315.000.

Posseme, Gilles, to Thomson-CSF. Apparatus for positioning a body by means of a magnetic field. 4,316,253, Cl. 364-432.000.

Pouderoux, Pierre; Marsault, Jean-Jacques; Devoucoux, Pierre; and Gerard, Roger, to Societe Anonyme dite: Stein Industrie. Support of fixing device for pipes. 4,315,528, Cl. 138-106.000.

Powell, Richard G.: *See*—
Freedman, Bernard; Powell, Richard G.; and Smith, Cecil R., Jr., 4,315,929, Cl. 424-248.540.
PPG Industries, Inc.: *See*—
Darlington, William B.; and DuBois, Donald W., 4,315,805, Cl. 204-98.000.
Tongel, Richard R., 4,315,789, Cl. 156-181.000.
Praetorius, Heinz: *See*—
Bergfeld, Manfred; Zengel, Hans-Georg; and Praetorius, Heinz, 4,316,031, Cl. 546-175.000.
Pray, Winston C., to Flexible Steel Lacing Company. Method of and apparatus for sciving belts. 4,315,450, Cl. 83-862.000.
Prentice, Alan L.; and Filippi, Richard E., to Air Products and Chemicals, Inc. Cryogenic freezing system. 4,315,409, Cl. 62-63.000.
Primavesi, Gregory J.: *See*—
Palmer, Stuart B.; and Primavesi, Gregory J., 4,316,183, Cl. 340-621.000.
Primont, James; Williams, Joseph; and Zazzera, Paul, Jr. Theft prevention system for business machines. 4,316,181, Cl. 340-571.000.
Prior, William; and Lindstrom, Richard S., to Arthur D. Little, Inc. Magnesium oxycement/fibrous web composites. 4,315,967, Cl. 428-285.000.
Prosise, Robert L.; Leveckis, Algis S.; and Gunn, Charles L. Cookware with liquid microwave energy moderator. 4,316,070, Cl. 219-10.55E.
Prost, Kalman J.: *See*—
Hampel, Daniel; and Prost, Kalman J., 4,316,177, Cl. 340-146.200.
Proudian, Andrew, to Second Foundation. Dual scan ultrasonic scanner. 4,315,435, Cl. 73-628.000.
Prusak, John J., to RCA Corporation. Spacer for stacked recorded discs. 4,316,281, Cl. 369-291.000.
Pryor, Timothy R., to Diffracto Ltd. Electro-optical sensor systems for thread and hole inspection. 4,315,688, Cl. 356-73.000.
Puntener, Alois; and Beffa, Fabio, to Ciba-Geigy Corporation. Chromium and cobalt complex amino hydroxy azomethine dyes. 4,315,854, Cl. 260-145.00A.
Purdy, James A.; and Dudley, Carl K., to Eltra Corporation. Brush wear detection and warning system. 4,316,186, Cl. 340-648.000.
Purdy, Samuel: *See*—
Cass, Louis G.; Poleschuk, Nicholas; and Purdy, Samuel, 4,316,239, Cl. 362-155.000.
Putz, Otto: *See*—
Osterloh, Manfred; Putz, Otto; and Stecker, Walter, 4,316,137, Cl. 323-364.000.
Pye Electronic Products Limited: *See*—
Perkins, Charles V.; and Firth, John R., 4,315,691, Cl. 356-331.000.
Quantronix Corporation: *See*—
Daly, Richard T., 4,316,074, Cl. 219-121.00L.
Quinlan, Patrick M., to Petrolite Corporation. Thiazine quaternary ammonium salts of polyepihalohydrin. 4,316,007, Cl. 528-405.000.
Rabatin, Jacob G., to General Electric Company. X-Ray image converters utilizing rare earth admixtures. 4,316,092, Cl. 250-483.000.
Rabatin, Jacob G.: *See*—
Brines, Marjorie J.; and Rabatin, Jacob G., 4,315,979, Cl. 430-6.000.
Raghu, Sivaraman, to American Cyanamid Company. 1-(2-Methoxyethyl)-2-methyl-4-phenyl-2-imidazoline. 4,316,038, Cl. 548-352.000.
Rainville, Edmond. Trailers for elongated loads. 4,315,631, Cl. 280-6.00H.
Rall, Bernhard, to Licentia Patent-Verwaltungs-G.m.b.H. Circuit arrangement for feeding modules in user stations. 4,316,135, Cl. 323-265.000.
Ramacci, Maria T., to SIGMA-TAU Industrie Farmaceutiche Riunite S.p.A. Pharmaceutical composition comprising L-carnitine for the treatment of hyperlipidaemias and hyperlipoproteinaemias. 4,315,944, Cl. 424-319.000.
Ramesohl, Hubert; and Herchenbach, Horst, to Klockner-Humboldt-Deutz AG. Method and apparatus for drying and pulverizing coal. 4,315,734, Cl. 432-14.000.
Ramseyer, Fritz, to Sulzer Brothers Limited. Method and system for mounting a heavy spherical container shell on a foundation. 4,315,388, Cl. 52-173.00R.
Randall, Stephen E.; and Overly, Carl G., to Sperry Corporation. Jack stand for agricultural attachment. 4,315,395, Cl. 56-10.100.
Rao, Chatty; and Bender, Hans, to Klockner-Humboldt-Deutz AG. Casting whose molding takes place during its recovery by means of filtration-dehydration. 4,315,972, Cl. 428-542.000.
Rao, Pradip: *See*—
Karolkiewicz, Walter F.; and Rao, Pradip, 4,315,824, Cl. 210-769.000.
Rattee, Ian D.; and Lewis, Edward J., to Decor Innovations Limited. Decoration of flexible substrates. 4,315,790, Cl. 156-230.000.
Rau, Willy; and Taus, Christian, to Maschinenfabrik Rau GmbH. Agricultural attachment. 4,315,547, Cl. 172-1.000.
Ravn, Jacob: *See*—
Leiter, L. David; and Ravn, Jacob, 4,315,427, Cl. 73-52.000.
Raynal, Serge F.: *See*—
Boileau, Sylvie L.; Lecolier, Serge L.; and Raynal, Serge F., 4,316,001, Cl. 528-14.000.
Raytheon Company: *See*—
Wilson, David T.; Tancrell, Roger H.; and Callerame, Joseph, 4,316,115, Cl. 310-327.000.
RCA Corporation: *See*—
Anderson, Charles H.; Credelle, Thomas L.; and Siekanowicz, Wieslaw W., 4,316,118, Cl. 313-422.000.
Carroll, Charles B., 4,316,117, Cl. 313-422.000.
Castle, Richard M., 4,316,143, Cl. 324-161.000.
Christensen, Roy M., 4,316,058, Cl. 179-1.0GQ.
Cooper, John C., 4,316,119, Cl. 315-8.000.
Hampel, Daniel; and Prost, Kalman J., 4,316,177, Cl. 340-146.200.
Hanak, Joseph J., 4,316,049, Cl. 136-244.000.
Hedel, Rudolph H., 4,315,358, Cl. 29-25.420.
Ho, Pang T., 4,316,159, Cl. 333-104.000.
Hockings, Eric F.; and Catanese, Carmen A., 4,316,126, Cl. 315-375.000.
Macina, Nicola A., 4,316,282, Cl. 370-70.000.
Mackey, Donald; and Fox, Ernest D., 4,316,211, Cl. 358-10.000.
Muterspaugh, Max W.; and Theriault, Gerald E., 4,316,220, Cl. 358-196.000.
Prusak, John J., 4,316,281, Cl. 369-291.000.
Rodda, William E., 4,316,212, Cl. 358-10.000.
Russell, John P.; Firester, Arthur H.; and Gorog, Istvan, 4,316,279, Cl. 369-109.000.
Shiratsuchi, Shinichi, 4,316,128, Cl. 315-411.000.
Simmons, George A.; and McGlashan, Kenneth W., 4,316,166, Cl. 335-213.000.
Smith, Terrence R.; and Marlowe, Frank J., 4,316,219, Cl. 358-150.000.
Tarng, Ming L., 4,315,782, Cl. 148-1.500.
Wharton, James H., 4,316,210, Cl. 358-4.000.
Wharton, James H.; and James, Jack E., 4,316,213, Cl. 358-11.000.
Yost, Thomas D., 4,316,214, Cl. 358-21.00R.
Ready, John F.: *See*—
Khan, Muhammad A.; Kruse, Paul W., Jr.; and Ready, John F., 4,316,147, Cl. 324-300.000.
Reed, Claude A., to International Food Equipment, Inc. Method for cooking hamburger patties. 4,315,950, Cl. 426-509.000.
Regitz, Gunter: *See*—
Hitzel, Volker; Weyer, Rudi; Geisen, Karl; and Regitz, Gunter, 4,315,940, Cl. 424-267.000.
Reichl, Ernst, to Bosch-Siemens Hausgerate GmbH. Hand-operated instrument for dental care or tooth treatment. 4,315,741, Cl. 433-82.000.
Reiling, Gilbert H.: *See*—
Graves, James A.; and Reiling, Gilbert H., 4,316,116, Cl. 313-344.000.
Reiser, Wolf; Draber, Wilfried; Buchel, Karl H.; Lurssen, Klaus; Frohberger, Paul-Ernst; and Paul, Volker, to Bayer Aktiengesellschaft. 1-Allyltriazole derivatives, processes for their preparation and their use as plant protection agents. 4,315,764, Cl. 71-76.000.
Reisman, Arnold: *See*—
Ho, Paul S.; Koster, Uwe; Kuan, Tung-Sheng; Ohdomari, Iwao; and Reisman, Arnold, 4,316,209, Cl. 357-67.000.
Reissenweber, Gernot, to BASF Aktiengesellschaft. Preparation of isatoic anhydrides. 4,316,020, Cl. 544-105.000.
Rendek, Robert B.: *See*—
Sleeth, Rhule B.; Theiler, Richard F.; and Rendek, Robert B., 4,315,948, Cl. 426-266.000.
Renner, Kurt; Langer, Ernst; and Eisenhut, Werner, to Bergwerksverband GmbH. Shed structure for a set of coke ovens. 4,315,804, Cl. 202-263.000.
Research Corporation: *See*—
Neckers, Douglas C.; Blossey, Erich C.; and Schaap, A. Paul, 4,315,998, Cl. 525-332.000.
Retter, Charles T., to Data General Corporation. Memory refresh means including means for providing refresh addresses during power failures. 4,316,248, Cl. 364-200.000.
Rey, Robert: *See*—
Girard, Edmond; and Rey, Robert, 4,315,403, Cl. 60-643.000.
Reymond, Jean C.: *See*—
Trocellier, Roger; and Reymond, Jean C., 4,315,690, Cl. 356-152.000.
Reynolds, William R. Backup power circuit. 4,316,097, Cl. 307-66.000.
Rhoades, Edward J.; Rosenberger, Edwin C.; and Waker, Jerome A., to Chem-Lawn Corporation. Spray gun injector. 4,315,600, Cl. 239-74.000.
Rhone-Poulenc Industries: *See*—
Bouge, Gilbert; Jacques, Roland; Poisson, Regis; and Seigneurin, Laurent, 4,315,839, Cl. 252-448.000.
Cassat, Robert; and Guillot, Gerard, 4,316,002, Cl. 528-107.000.
Mamourian, Armand; and Bousquet, Francois, 4,315,899, Cl. 423-321.00R.
Rhythm Watch Company Limited: *See*—
Endo, Itaru, 4,316,277, Cl. 368-76.000.
Richards, Roy: *See*—
Odle, Robert R.; Berry, Milton E.; Brunson, William W.; Burson, William R.; Cofer, Daniel B.; and Richards, Roy, 4,315,775, Cl. 75-76.000.
Richardson-Vicks Inc.: *See*—
Heyd, Allen; and Shah, Nutan B., 4,315,779, Cl. 106-35.000.
Richter Gedeon Vegyeszeti Gyar RT: *See*—
Takacs, Istvan; Kerey, Gyorgy; Illes, Janos; Rudolf, Peter; Gere, Pal; Czebe, Laszlo; and Neszmelyi, Erzsebet, 4,315,923, Cl. 424-183.000.
Rick, Norman A.: *See*—
Kayser, John P.; and Rick, Norman A., 4,315,506, Cl. 128-276.000.
Ricoh Co., Ltd.: *See*—
Mizuta, Toshiaki; Abe, Takeshi; Yoshihara, Ichiro; Saito, Kazuhito; and Tsuchiya, Keishin, 4,316,262, Cl. 364-900.000.
Noguchi, Koichi, 4,316,125, Cl. 315-241.00R.
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Zeidler, Georg; Dehnert, Johannes; Hansen, Guenter; and Riedel, Guenther, 4,315,756, Cl. 44-59.000.

Rieffle, Paul F., to Coupling Systems, Inc. Pipe couplings and coupling gaskets. 4,316,053, Cl. 174-84.00S.

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Hereth, Alfred; Rieger, Klaus; and Wildgruber, Josef, 4,315,957, Cl. 427-155.000.

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Demuth, Robert, 4,315,346, Cl. 19-65.0CR.

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Woodward, James C.; and Holland, Marion D., 4,315,344, Cl. 15-345.000.

Robil Company: *See—*
Barwise, Robert D., 4,315,652, Cl. 294-86.00R.

Robin, Gerard: *See—*
Antoine, Robert; Bricot, Claude; and Robin, Gerard, 4,315,723, Cl. 425-110.000.

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Wang, Cheng-Chi; and Vanderwyck, August H. B., 4,315,477, Cl. 118-64.000.
Webber, William T.; and Stabinsky, Leon, 4,315,490, Cl. 123-275.000.

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Torre, Giancarlo D.; and de Simone, Vittorio, 4,315,471, Cl. 112-153.000.
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Ollinger, Janet, 4,315,870, Cl. 260-947.000.

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Plath, Peter; Wuerzer, Bruno; and Rohr, Wolfgang, 4,316,039, Cl. 548-362.000.
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Bhangu, Jagnandan K.; Fry, Peter; and Hustler, David, 4,315,406, Cl. 60-754.000.
Pidcock, Anthony; Close, Desmond; and To Kwan, William C., 4,315,405, Cl. 60-752.000.

Romankiw, Lubomyr T.: *See—*
Castellani, Eugene E.; Croll, Ian M.; Pfeiffer, Aloysius T.; and Romankiw, Lubomyr T., 4,315,985, Cl. 430-314.000.

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Root, Errol L., to International Telephone and Telegraph Corporation. Method and apparatus for determining the location of an arc in a waveguide transmission line or the like. 4,316,139, Cl. 324-52.000.

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French, David M.; Rosborough, J. T. L.; and Swedenberg, Clyde J., 4,315,830, Cl. 252-182.000.

Rosenberger, Edwin C.: *See—*
Rhoades, Edward J.; Rosenberger, Edwin C.; and Waker, Jerome A., 4,315,600, Cl. 239-74.000.

Rosler, Helmut; Irmer, Heimbert U.; and Bigall, Klaus-Dieter, to Siemens Aktiengesellschaft. Monolithically integrated digital semiconductor circuit. 4,316,104, Cl. 307-308.000.

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Rourke, John L.; and Keukelaar, Ronald E., to Xerox Corporation. Composite material for ozone removal. 4,315,837, Cl. 252-430.000.

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Martel, Jacques; Tessier, Jean; Demoute, Jean-Pierre; and Teche, Andre, 4,315,868, Cl. 260-465.00D.
Martel, Jacques; and Tessier, Jean, 4,315,943, Cl. 424-304.000.

Rowbottam, Francis W.; Skinner, Nathan L.; Niswonger, John O.; and Wadler, Milt, to JJNR Corporation. Welding apparatus. 4,315,732, Cl. 431-344.000.

Roy, Nilendu; and Horton, Arnold, to Federal Pacific Electric Company. Thermal-magnetic circuit breaker. 4,316,163, Cl. 335-37.000.

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Ruetschi, Paul, to Leclanche S.A. Mold for casting grid for tubular plates of a lead-acid battery and resulting casting. 4,315,977, Cl. 429-233.000.

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Rupp, Gerhard H.; and Schneider, Hans F., to TRW Inc. Plunger switch. 4,316,065, Cl. 200-61.890.

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Hansen, James E.; and Rutchik, Walter L., 4,316,230, Cl. 361-114.000.

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Ryaby, John P.; and Pilla, Arthur A., to Electro-Biology, Inc. Modification of the growth, repair and maintenance behavior of living tissues and cells by a specific and selective change in electrical environment. 4,315,503, Cl. 128-1.500.

Sadamatsu, Shigeru; Yamamoto, Kohichi; and Ohmi, Kazuaki, to Fuji Xerox Co., Ltd. Electrophotographic member with metallocene containing overlayer. 4,315,980, Cl. 430-58.000.

Sadhukhan, Pasupati, to Occidental Research Corporation. Heat transfer process and system. 4,315,402, Cl. 60-641.300.

Sahler, Gerd: *See—*
Knipp, Ulrich; Ganster, Otto; and Sahler, Gerd, 4,315,536, Cl. 152-330.00R.

Sai, Toshiyuki: *See—*
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Saito, Atsunori; Naganoma, Masanaori; Iwata, Yasuhiro; and Usami, Kiyoshi, to Nippondenso Co., Ltd. Electric control method for automobile air conditioner. 4,316,251, Cl. 364-424.000.

Saito, Kazuhito: *See—*
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Saito, Takeo; Ishida, Hiroaki; Segawa, Takashi; Nagaoka, Shinji; and Takazawa, Yuzuru, to Seiko Koki Kabushiki Kaisha. Automatic focusing adjustor device. 4,316,085, Cl. 250-204.000.

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Sakakibara, Shiro: *See—*
Miki, Nobuaki; Sakakibara, Shiro; and Yokoyama, Fumitomo, 4,315,519, Cl. 137-56.000.

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Sakamaki, Hisashi: *See—*
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Sakamoto, Kenichi: *See—*
Takahashi, Kotei; Endo, Teruo; Kawaguchi, Masayuki; and Sakamoto, Kenichi, 4,315,698, Cl. 403-59.000.

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Sakudo, Noriyuki; Tokiguchi, Katsumi; Koike, Hidemi; and Kanomata, Ichiro, to Hitachi, Ltd. Microwave plasma ion source. 4,316,090, Cl. 250-423.00R.

Sakurada, Masahiko, to Olympus Optical Co. Ltd. Automatic analytical apparatus. 4,315,891, Cl. 422-64.000.

Sakurai, Toshiyuki: *See—*
Onishi, Masayoshi; Haruta, Yoshikatu; Sakurai, Toshiyuki; and Yamamoto, Shigemi, 4,315,493, Cl. 123-617.000.

Sandoz, Inc.: *See—*
Simpson, William R., 4,315,860, Cl. 260-245.700.

Sandoz Ltd.: *See—*
Bitterli, Peter, 4,316,032, Cl. 548-109.000.
Buecheler, Paul, 4,315,857, Cl. 260-207.100.
Christensen, Anne V., 4,315,934, Cl. 424-256.000.
Funfschilling, Peter, 4,316,042, Cl. 560-27.000.
Maclay, William P.; and Wallace, Mackenzie G., 4,315,937, Cl. 424-261.000.

Sandstrom, William A.: *See*—
Patel, Jitendra G.; Sandstrom, William A.; and Tarman, Paul B., 4,315,758, Cl. 48-197.00R.
Sanko Air Plant, Ltd.: *See*—
Hayashi, Taro; and Moriyama, Aritsune, 4,315,456, Cl. 98-36.000.
Sanraku-Ocean Co., Ltd.: *See*—
Oki, Toshikazu; Yoshimoto, Akihiro; Matsuzawa, Yasue; Inui, Taiji; Takeuchi, Tomio; and Umezawa, Hamao, 4,316,011, Cl. 536-17.00A.
Santek, Inc.: *See*—
Michel, Thomas J., 4,316,231, Cl. 361-212.000.
Sapino, Chester: *See*—
Walker, Derek; Silvestri, Herbert H.; Sapino, Chester; and Johnson, David A., 4,316,016, Cl. 544-16.000.
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Sato, Hideo: *See*—
Kawamura, Koichi; Katsuyama, Harumi; and Sato, Hideo, 4,315,983, Cl. 430-70.000.
Sato, Makoto: *See*—
Hayashi, Tsutomu; Inoue, Hidehiko; and Sato, Makoto, 4,315,659, Cl. 303-116.000.
Sato, Masaki; Okuda, Hironori; Ito, Motoya; Makino, Yuji; Wachi, Yasuyuki; Takahashi, Noriyoshi; and Watanabe, Masatoshi, to Hitachi, Ltd. Electric rotary machine. 4,316,113, Cl. 310-262.000.
Sato, Tadashi: *See*—
Sugiura, Susumu; and Sato, Tadashi, 4,315,684, Cl. 355-14.00R.
Sato Technical Research Laboratory Ltd.: *See*—
Ueda, Setsuo; Yasuda, Takashi; Yamada, Tokuyoshi; and Kobayashi, Shigeki, 4,315,720, Cl. 425-8.000.
Sato, Yo, to Kabushiki Kaisha Sato. Drum type line printer. 4,315,460, Cl. 101-93.090.
Satron, Inc.: *See*—
Looker, Robert; and McLennan, Richard E., 4,315,350, Cl. 24-68.00R.
Savard, Guy; and Lee, Robert G. H., to Canadian Liquid Air Ltd.; and Air Liquide Canada Ltee. Method of safely injecting oxygen reactive materials into a submerged oxygen gas stream. 4,315,774, Cl. 75-74.000.
Sawano, Hirokazu: *See*—
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Sawatari, Takeo; Keating, Patrick N.; Steinberg, Ronald F.; and Mueller, Rolf K., to Bendix Corporation, The. Low angle radar processing means. 4,316,191, Cl. 343-16.00R.
Sawyer, Ernest W., to Western Electric Company, Inc. Methods of and system for controlling copper concentration in a solution. 4,315,518, Cl. 137-3.000.
Saxarra, Jurgen; and Pivit, Erich, to Licentia Patent-Verwaltungs-G.m.b.H. Switching regulator control. 4,316,136, Cl. 323-282.000.
Scata', Umberto; Luciani, Luciano; and Barbe', Pier C., to Montedison S.p.A. Components of catalysts for polymerizing alpha-olefins and the catalysts formed from the components. 4,315,835, Cl. 252-429.00B.
Schaafsma, Michael. Wallboard corners. 4,315,390, Cl. 52-288.000.
Schaap, A. Paul: *See*—
Neckers, Douglas C.; Blossey, Erich C.; and Schaap, A. Paul, 4,315,998, Cl. 525-332.000.
Schack, James B.; and Marks, Timothy L. Insert for supporting hangers for conduit, pipe, cables, etc., in a channel member. 4,315,393, Cl. 52-710.000.
Schaeffer, Howard J.; DeMiranda, Paulo M. S.; Elion, Gertrude B.; and Hitchings, George H., to Burroughs Wellcome Co. Adenosine deaminase inhibitors. 4,315,920, Cl. 424-180.000.
Schafer, Thomas: *See*—
Hansen, Jens; and Schafer, Thomas, 4,316,224, Cl. 360-72.200.
Scharwaechter, Peter; Gutsche, Klaus; Kohlmann, Wilhelm; Kroemer, Gerd, deceased; by Kroemer, Norma, legal representative; by Kroemer, Helmut, legal representative; and by Kroemer, Maria M., legal representative, to BASF Aktiengesellschaft. N-Pyrimidinyl-imidoacid esters and drugs containing the said compounds. 4,315,931, Cl. 424-251.000.
Schefczik, Ernst, to BASF Aktiengesellschaft. Monoazo disperse dyes containing a nitrophenyl group and a homophthalimide group. 4,315,855, Cl. 260-155.000.
Scheibenreif, Karl: *See*—
Fussl, Erwin; and Scheibenreif, Karl, 4,315,735, Cl. 432-25.000.
Scheidler, Raymond T., to Park, Ronald Frederick, a part interest. Animal feeder. 4,315,483, Cl. 119-51.110.
Schering AG: *See*—
Boroschewski, Gerhard; and Arndt, Friedrich, 4,315,769, Cl. 71-111.000.
Schering, A.G.: *See*—
Schulze, Paul-Eberhard; and Kerb, Ulrich, 4,315,866, Cl. 260-397.300.
Schering Corporation: *See*—
Leibowitz, Paul; and Weinstein, Marvin J., 4,315,852, Cl. 260-112.00R.
Schijf, Hendrikus J. Profiled hinge joint. 4,315,345, Cl. 16-267.000.
Schlegel, Francine L.: *See*—
Schlegel, Ronald L.; and Schlegel, Francine L., 4,315,627, Cl. 273-249.000.
Schlegel, Ronald L.; and Schlegel, Francine L. Game board apparatus. 4,315,627, Cl. 273-249.000.
Schleicher, Thomas R.: *See*—
Drennan, Dennis B.; Maylahn, Donald J.; and Schleicher, Thomas R., 4,315,504, Cl. 128-149.000.
Schlicht, Raymond C.; Levine, Stephen A.; and Chafetz, Harry, to Texaco Inc. Reaction products of carbon disulfide with thiomolybdenum derivatives of alkenylsuccinimides and lubricants containing same. 4,315,826, Cl. 252-46.400.
Schlumberger Technology Corporation: *See*—
Vincent, Philippe, 4,316,250, Cl. 364-422.000.
Zarudiansky, Alain, 4,315,417, Cl. 62-514.00R.
Schmaling, Roderick N.; and Olson, Warren E., to Pitney Bowes Inc. Cam yoke for electrophotocopier reciprocating carriage. 4,315,683, Cl. 355-8.000.
Schmalz, Roman, to Logemann Brothers Company. Method for processing metal material into bales. 4,315,459, Cl. 100-39.000.
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Forny, Arnold; Koch, Jakob; Niederer, Hans; and Schmid, Otto, 4,315,574, Cl. 220-72.000.
Schmitt, Ernest G.: *See*—
Gallant, Stuart L.; Caron, Paul R.; Dunn, Stanley M.; Palmer, Walter E.; Schmitt, Ernest G.; and Taddeo, Michael, 4,316,249, Cl. 364-417.000.
Schmitt, Frederick L.: *See*—
Trenkle, Robert W.; Mookherjee, Braja D.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,315,953, Cl. 426-538.000.
Wiegers, Wilhelmus J.; Sprecker, Mark A.; Watkins, Hugh; Vock, Manfred H.; and Schmitt, Frederick L., 4,315,951, Cl. 426-536.000.
Schmitt, Richard L.; Lai, Ban-Yen; and Husain, Matloob, to Chicago Bridge & Iron Company. Cooling system, for power generating plant, using split or partitioned heat exchanger. 4,315,404, Cl. 60-690.000.
Schmitz, Charles J., to Harper-Wyman Company. Control arrangement for self-cleaning oven. 4,316,079, Cl. 219-413.000.
Schnall, Gunther; Aldenhoven, Klaus; and Blochl, Hanns, to AGFA-Gevaert AG. Pivotal swing-out fuser assembly for copying apparatus. 4,315,736, Cl. 432-59.000.
Schneider, Claus; Weber, Karl-Heinz; Walther, Gerhard; Boke, Karin; and Bechtel, Wolf D., to Boehringer Ingelheim Gmbh. 4-Phenyl-4,5,6,7-tetrahydro-pyrrolo [2,3-c] pyridines and salts thereof. 4,315,938, Cl. 424-267.000.
Schneider, Hans F.: *See*—
Rupp, Gerhard H.; and Schneider, Hans F., 4,316,065, Cl. 200-61.890.
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Kummer, Rudolf; Weiss, Franz-Josef; Schneider, Heinz-Walter; and Taglieber, Volker, 4,316,047, Cl. 560-206.000.
Schnitzius, Klaus: *See*—
Freitag, Herbert; and Schnitzius, Klaus, 4,316,098, Cl. 307-119.000.
Schritt, Renaldo F., to Grad-Line, Inc. Electro-hydraulic steering system. 4,315,555, Cl. 180-140.000.
Schroder, Karl, to Meggle Milchindustrie GmbH & Co. KG. Process for making a milk protein digestion product and foodstuffs comprising same. 4,315,949, Cl. 426-334.000.
Schroder, Karl: *See*—
Kuipers, Arie; and Schroder, Karl, 4,315,954, Cl. 426-583.000.
Schrougham, Benton: *See*—
Lee, John W.; and Schrougham, Benton, 4,315,387, Cl. 52-156.000.
Schuberth, Ralph G.: *See*—
Hartley, Henry F.; and Schuberth, Ralph G., 4,316,246, Cl. 364-200.000.
Schuessler, Charles J.: *See*—
Wilzig, Herbert; and Schuessler, Charles J., 4,315,647, Cl. 292-143.000.
Schulze, Paul-Eberhard; and Kerb, Ulrich, to Schering, A.G. Process for preparing 11-keto steroids. 4,315,866, Cl. 260-397.300.
Schumacher, Gary B.: *See*—
Colangelo, Dominick; Pfeifer, George F.; and Schumacher, Gary B., 4,316,242, Cl. 363-21.000.
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Kempter, Fritz E.; Schupp, Eberhard; and Gulbins, Erich, 4,315,840, Cl. 260-18.0TN.
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Brodman, Bruce W.; Devine, Michael P.; and Schwartz, Stuart, 4,315,785, Cl. 149-19.800.
Schwarz, Erwin; and Swozil, Adolf, to Sigri Elektrographit Gesellschaft mit beschrankter Haftung. Vacuum support for burst protection device. 4,315,575, Cl. 220-89.00A.
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Doub, Leonard; Haskell, Theodore H.; Mich, Thomas F.; and Schweiss, Dietrich, 4,315,858, Cl. 260-239.100.
Schweizer, Dieter; and Glasl, Johann, to Henkel Kommanditgesellschaft auf Aktien. Lithium soaps of substituted hydroxylated fatty acids and their use as thickening agents. 4,315,825, Cl. 252-41.000.
Scifres, Donald R.; Streifer, William; and Burnham, Robert D., to Xerox Corporation. Optical repeater integrated lasers. 4,316,156, Cl. 372-50.000.
SCM Corporation: *See*—
Nadkaris, Anil V., 4,315,770, Cl. 75-0.5BC.
Nadkarni, Anil V.; Haws, Warren J.; and Whitman, Charles I., 4,315,777, Cl. 75-232.000.
Scocozza, Victor. Hanger support. 4,315,615, Cl. 248-489.000.
Scott & Fetzer Co., The: *See*—
Neroda, Thomas H.; and Hollis, Roger E., 4,315,343, Cl. 15-339.000.

Scott Paper Company: *See—*
Mason, Charles R.; Osteen, David K.; and Vaalburg, Lawrence, 4,315,965, Cl. 428-198.000.

Sebag, Henri: *See—*
Kalopissis, Gregoire; Vanlerberghe, Guy; and Sebag, Henri, 4,315,912, Cl. 424-70.000.

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Proudian, Andrew, 4,315,435, Cl. 73-628.000.

Seeman, Howard H.; and Kaupp, Robert F., to Selas Corporation of America. Floating radiant tube sheets for vertical tube reformers and the like. 4,315,486, Cl. 122-510.000.

Segawa, Takashi: *See—*
Saito, Takeo; Ishida, Hiroaki; Segawa, Takashi; Nagaoka, Shinji; and Takazawa, Yuzuru, 4,316,085, Cl. 250-204.000.

Seglias, Werner, to Von Roll AG. Loading method and device for feeding waste-filled containers into a rotary incinerator. 4,315,712, Cl. 414-149.000.

Seiders, Roger S. Fishing rod eye tying device. 4,315,606, Cl. 242-7.190.

Seigneurin, Laurent: *See—*
Bouge, Gilbert; Jacques, Roland; Poisson, Regis; and Seigneurin, Laurent, 4,315,839, Cl. 252-448.000.

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Saito, Takeo; Ishida, Hiroaki; Segawa, Takashi; Nagaoka, Shinji; and Takazawa, Yuzuru, 4,316,085, Cl. 250-204.000.

Seitz, Alan F., to Data Motion Incorporated. Sheet-feed tractor with eccentric clamping device. 4,315,585, Cl. 226-74.000.

Seki, Tomio: *See—*
Arakawa, Seiji; Seki, Tomio; Matsuoka, Hidekazu; Harada, Hatsunori; and Ninomiya, Michinari, 4,315,914, Cl. 424-89.000.

Sekido, Satoshi; Sotomura, Tadashi; and Nakai, Muneaki, to Matsushita Electric Industrial Co., Ltd. Solid-state lithium-iodine primary battery. 4,315,975, Cl. 429-191.000.

Sekine, Kenji: *See—*
Matsumura, Akira; Endo, Akira; and Sekine, Kenji, 4,316,173, Cl. 340-32.000.

Selas Corporation of America: *See—*
Seeman, Howard H.; and Kaupp, Robert F., 4,315,486, Cl. 122-510.000.

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Vidotto, Graziano; Sellan, Febo; Bacchetta, Enzo; Mainardi, Sandro; and Benussi, Giovanni, 4,315,843, Cl. 260-29.6PT.

Sellstedt, John H.; and Klaubert, Dieter H., to American Home Products Corporation. N-Benzyl and N-substituted benzyl tetrazole-5-carboxylic acids and the preparation thereof. 4,316,037, Cl. 548-253.000.

Semerdjiev, Stefan G.; and Popov, Nikolay T., to Institute po Metaloznanie i Technologia na Metalite. Distributing device for machines for injection molding of thermoplastic parts with solid skin and cellular core. 4,315,726, Cl. 425-560.000.

Senjo, Teizo; and Kobayashi, Makio, to Fuji Kasui Engineering Co., Ltd.; and Sumitomo Metal Industries, Ltd. Plate column. 4,315,872, Cl. 261-113.000.

Senturia, Stephen D., to Massachusetts Institute of Technology. Charge-flow transistors. 4,316,140, Cl. 324-71.0SN.

Seto, Tadao: *See—*
Tokunaga, Yukio; Sugiyama, Kiyoshi; and Seto, Tadao, 4,315,643, Cl. 282-27.500.

Seymour, Theodore J.: *See—*
Laurie, Gordon H.; Seymour, Theodore J.; Sakauye, Randall T.; and Marlow, John V., 4,315,356, Cl. 29-6.100.

Shah, Nutan B.: *See—*
Heyd, Allen; and Shah, Nutan B., 4,315,779, Cl. 106-35.000.

Shaklee, James L. Adjustable soffit vent. 4,315,455, Cl. 98-32.000.

Shanbrom, Edward. Depyrogenation process. 4,315,919, Cl. 424-177.000.

Shannon, John A.: *See—*
Laffoon, Perry D.; and Shannon, John A., 4,316,095, Cl. 290-38.00R.

Shapiro, Edward: *See—*
Bramer, Henry C.; and Shapiro, Edward, 4,315,895, Cl. 422-171.000.

Shapiro, Jonathan S.; and Holland, William P., to Machlett Laboratories, Incorporated, The. X-Ray tube control system. 4,316,129, Cl. 318-313.000.

Sharp Kabushiki Kaisha: *See—*
Tanabe, Takeshi, 4,316,068, Cl. 219-10.55B.
Washizuka, Isamu; and Tateishi, Iwao, 4,316,081, Cl. 235-92.0DN.

Shaw, Wilfrid G.: *See—*
Miller, Arthur F.; Callahan, James L.; and Shaw, Wilfrid G., 4,315,838, Cl. 252-448.000.

Sheets, Francis E., to Eli Lilly and Company. Fermentation system and probe detector holder. 4,315,990, Cl. 435-291.000.

Shell Oil Company: *See—*
Dante, Mark F.; and Allen, Roy A., 4,316,003, Cl. 528-111.000.
Stuivenwold, Paulus A.; and Van Timmeren, Kornelis, 4,315,428, Cl. 73-61.00R.
Veenstra, Uiltje J., 4,315,880, Cl. 264-119.000.
Willis, Carl L.; and Slaugh, Lynn H., 4,316,008, Cl. 528-487.000.

Shelton, Richard M.: *See—*
Greenig, Nelson L.; and Shelton, Richard M., 4,316,199, Cl. 346-160.000.

Shenkman, Mikhail Y.: *See—*
Ivanov, Valentin A.; Khodosh, Vladimir A.; Ostrovsky, Igor S.; Shenkman, Mikhail Y.; Koshelev, Jury A.; Vlasov, Sergei N.; Pachulia, Budu P.; and Fishman, Iosif D. Y., 4,315,701, Cl. 405-150.000.

Sherwood Medical Industries, Inc.: *See—*
Stone, Glen; and Haglund, Gary J., 4,315,892, Cl. 422-101.000.

Shibayama, Akinori; Maio, Kenji; Hotta, Masao; and Yokozawa, Norio, to Nippon Telegraph & Telephone Public Corp.; and Hitachi, Ltd. Digital-to-analog conversion system with compensation circuit. 4,316,178, Cl. 340-347.0DA.

Shigoku, Masaharu, to Minolta Camera Kabushiki Kaisha. Zoom lens barrel with single operating ring. 4,315,670, Cl. 350-429.000.

Shihabi, David S., to Mobil Oil Corporation. Hydrocarbon conversion process. 4,315,814, Cl. 208-111.000.

Shiley, Inc.: *See—*
Crandall, Norman C.; and French, Robert C., 4,315,505, Cl. 128-200.260.

Shin-Etsu Chemical Co. Ltd.: *See—*
Imada, Kiyoshi; Ueno, Susumu; and Nomura, Hirokazu, 4,315,808, Cl. 204-169.000.

Shinagawa, Kiminari: *See—*
Fujiwara, Hideo; Kudo, Mitsuhiro; Tamura, Teizou; Sugishita, Nobuyuki; Shiroishi, Yoshihiro; Kimura, Takeshi; Shinagawa, Kiminari; and Kumasaka, Noriyuki, 4,316,228, Cl. 360-127.000.

Shinn, Raymond R. Earth moving bucket. 4,315,375, Cl. 37-118.00R.

Shinoda, Nobuhiko: *See—*
Hosoe, Kazuya; Shinoda, Nobuhiko; Fukuda, Minoru; Kawabata, Takashi; Kinoshita, Takao; and Ito, Tadashi, 4,315,674, Cl. 354-25.000.

Shiraishi, Takeichi: *See—*
Matsuura, Kazuo; Shiraishi, Takeichi; Kawamata, Etsuo; Kuroda, Nobuyuki; and Miyoshi, Mituji, 4,315,999, Cl. 526-114.000.

Shiratsuchi, Shinichi, to RCA Corporation. Television receiver focus voltage circuit. 4,316,128, Cl. 315-411.000.

Shiroishi, Yoshihiro: *See—*
Fujiwara, Hideo; Kudo, Mitsuhiro; Tamura, Teizou; Sugishita, Nobuyuki; Shiroishi, Yoshihiro; Kimura, Takeshi; Shinagawa, Kiminari; and Kumasaka, Noriyuki, 4,316,228, Cl. 360-127.000.

Shirota, Kohei: *See—*
Yanaka, Takashi; and Shirota, Kohei, 4,316,087, Cl. 250-307.000.

Shomura, Eiichi: *See—*
Makabe, Hachiro; Watanabe, Kazuo; Takenoya, Hideaki; Shomura, Eiichi; and Tonomura, Yoshinobu, 4,315,472, Cl. 112-158.00E.

Shonerd, David E. Self-compensating solar collector. 4,315,499, Cl. 126-422.000.

Shumrak, George K.: *See—*
Mack, Anthony C.; Phillips, Robert A.; and Shumrak, George K., 4,316,078, Cl. 219-386.000.

Siekanowicz, Wieslaw W.: *See—*
Anderson, Charles H.; Credelle, Thomas L.; and Siekanowicz, Wieslaw W., 4,316,118, Cl. 313-422.000.

Siemens Aktiengesellschaft: *See—*
Adolph, Erich; Bayrak, Unal; and Stecker, Walter, 4,316,138, Cl. 323-364.000.
Essler, Richard, 4,316,164, Cl. 335-202.000.
Lechner, Ernst-Friedrich; Meusel, Otto; and Muller, Meinhardt, 4,316,236, Cl. 361-429.000.
Lichti, Reiner, 4,316,056, Cl. 178-23.00R.
Ludwig, Volker, 4,316,057, Cl. 178-63.00E.
Moeller, Helmut, 4,316,165, Cl. 335-202.000.
Osterloh, Manfred; Putz, Otto; and Stecker, Walter, 4,316,137, Cl. 323-364.000.
Rosler, Helmut; Irmer, Heimbert U.; and Bigall, Klaus-Dieter, 4,316,104, Cl. 307-308.000.
Wuestner, Friedrich, 4,315,584, Cl. 225-2.000.

Siemens Gammasonics, Inc.: *See—*
Del Medico, Anthony P.; and Arseneau, Roger E., 4,316,257, Cl. 364-527.000.

Sievers, Kirk A.: *See—*
Balan, Isadore; and Sievers, Kirk A., 4,316,134, Cl. 322-99.000.

SIGMA-TAU Industrie Farmaceutiche Riunite S.p.A.: *See—*
Ramacci, Maria T., 4,315,944, Cl. 424-319.000.

Sigri Elektrographit Gesellschaft mit beschrankter Haftung: *See—*
Schwarz, Erwin; and Swozil, Adolf, 4,315,575, Cl. 220-89.00A.

Silver, Jules; and Vaiciulis, Thomas J. Two-compartment container with means for dispersing contents of one compartment into the other compartment. 4,315,570, Cl. 206-221.000.

Silvestri, Herbert H.: *See—*
Walker, Derek; Silvestri, Herbert H.; Sapino, Chester; and Johnson, David A., 4,316,016, Cl. 544-16.000.
Walker, Derek; Silvestri, Herbert H.; Sapino, Chester; and Johnson, David A., 4,316,017, Cl. 544-026.000.

Simandi, Laszlo: *See—*
Lugosi, Gyorgy; Simay, Antal; Bodnar, Janos; Turcsan, Istvan; Jelinek, Istvan; Somfai, Eva; and Simandi, Laszlo, 4,315,861, Cl. 260-340.90R.

Simay, Antal: *See—*
Lugosi, Gyorgy; Simay, Antal; Bodnar, Janos; Turcsan, Istvan; Jelinek, Istvan; Somfai, Eva; and Simandi, Laszlo, 4,315,861, Cl. 260-340.90R.

Simmons, George A.; and McGlashan, Kenneth W., to RCA Corporation. Self-converging deflection yoke and winding method and apparatus therefor. 4,316,166, Cl. 335-213.000.

Simpson, William R., to Sandoz, Inc. 5-Pyrrolidino, piperidino or N'-2-hydroxyethylpiperazino-7-phenyl or substituted phenyl-2,3-dihydro-1H-1,4-diazepines. 4,315,860, Cl. 260-245.700.

Sitterly, Linda G.: *See—*
Greiner, Steven P.; Marshall, Wayne E.; and Sitterly, Linda G., 4,315,946, Cl. 426-46.000.

SKF Kugellagerfabriken GmbH: *See*—
Korber, Joachim; Bange, Gunter; Poll, Walter; Kaltenbach, Volker Bensberg; and Pittroff, Hans, 4,316,175, Cl. 340-57.000.
SKF (U.K.) Limited: *See*—
Greener, Brian; and Pedder, Simon J., 4,315,566, Cl. 193-37.000.
Skinner, Nathan L.: *See*—
Rowbottam, Francis W.; Skinner, Nathan L.; Niswonger, John O.; and Wadler, Milt, 4,315,732, Cl. 431-344.000.
Skoien, Ralph W. Insulation batts. 4,315,962, Cl. 428-12.000.
SKW Trostberg Aktiengesellschaft: *See*—
Freissmuth, Alfred; Gmohling, Werner; and Rock, Heinrich, 4,315,773, Cl. 75-58.000.
Slaugh, Lynn H.: *See*—
Willis, Carl L.; and Slaugh, Lynn H., 4,316,008, Cl. 528-487.000.
Sleeth, Rhule B.; Theiler, Richard F.; and Rendek, Robert B., to Armour and Company. Process for preparing cooked bacon having reduced levels of N-nitrosamines. 4,315,948, Cl. 426-266.000.
Smit, Julie A. Insertion and removal catheters and intestinal tubes for restricting absorption. 4,315,509, Cl. 128-303.00R.
Smith, Cecil R., Jr.: *See*—
Freedman, Bernard; Powell, Richard G.; and Smith, Cecil R., Jr., 4,315,929, Cl. 424-248.540.
Smith, Daniel L. Disposable receptable for expendable item. 4,315,592, Cl. 229-38.000.
Smith, Ennis C.; and Gunter, Addison Y., deceased (by Gunter, Ann R., executrix), to Hudson Products Corporation. Cooling equipment. 4,315,873, Cl. 261-158.000.
Smith, Lawrence W.: *See*—
Fulkerson, David W.; and Smith, Lawrence W., 4,315,550, Cl. 173-28.000.
Smith, Terrence R.; and Marlowe, Frank J., to RCA Corporation. Synchronizing circuit adaptable for various TV standards. 4,316,219, Cl. 358-150.000.
SmithKline Corporation: *See*—
Ali, Fadia E., 4,315,935, Cl. 424-258.000.
Smyth, Edgar H. Selector fuse. 4,316,170, Cl. 337-257.000.
Sneeringer, Andrew M. Baseball shoe. 4,315,374, Cl. 36-126.000.
Snellman, Donald L., to International Business Machines Corporation. Sheet collating deflector. 4,315,621, Cl. 271-296.000.
Societe Anonyme des Usines Chausson: *See*—
Moranne, Jean-Pierre, 4,315,540, Cl. 165-67.000.
Societe Anonyme dite: CERAVER: *See*—
Willem, Michel, 4,316,054, Cl. 174-140.00S.
Societe Anonyme dite: Stein Industrie: *See*—
Pouderoux, Pierre; Marsault, Jean-Jacques; Devoucoux, Pierre; and Gerard, Roger, 4,315,528, Cl. 138-106.000.
Societe de Recherches et de Perfectionnements Industriels et Etablissements H. Morin-Secretan: *See*—
Pipaud, Lucien M. A., 4,315,567, Cl. 194-101.000.
Societe D'Etudes Scientifiques et Industrielles: *See*—
Perrot, Jacques, 4,315,924, Cl. 424-233.000.
Societe Lectra Systemes, S.A.: *See*—
Etcheparre, Jean; and Etcheparre, Bernard, 4,315,437, Cl. 74-89.220.
Societe Nationale des Poudres et Explosifs: *See*—
Boileau, Sylvie L.; Lecolier, Serge L.; and Raynal, Serge F., 4,316,001, Cl. 528-14.000.
Societe Nationale Elf Aquitaine (Production): *See*—
Barbier, Maurice G. Y.; and Staron, Philippe J., 4,316,266, Cl. 367-21.000.
Soda, Hidemi: *See*—
Ozaki, Yukinori; and Soda, Hidemi, 4,315,964, Cl. 428-182.000.
Sodaro, Donald: *See*—
Johnson, Philip, Jr.; Mendoza, Luis; and Sodaro, Donald, 4,315,596, Cl. 236-94.000.
Solheim, Odd E.: *See*—
Vareide, Dag; and Solheim, Odd E., 4,315,469, Cl. 110-245.000.
Soma, Shuichi: *See*—
Ishimitsu, Keiichi; Kasahara, Isamu; Yamada, Tomio; Matsuda, Michihiko; Takahashi, Hidemitsu; and Soma, Shuichi, 4,316,044, Cl. 560-105.000.
Somfai, Eva: *See*—
Lugosi, Gyorgy; Simay, Antal; Bodnar, Janos; Turcsan, Istvan; Jelinek, Istvan; Somfai, Eva; and Simandi, Laszlo, 4,315,861, Cl. 260-340.90R.
Sony Corporation: *See*—
Isono, Katsuo; and Akazawa, Susumu, 4,316,216, Cl. 358-67.000.
Soong, Tsai C., to Xerox Corporation. Stapler apparatus. 4,315,589, Cl. 227-155.000.
Sorensen, Lloyd L. Casket vault. 4,315,353, Cl. 27-2.000.
Sorenson, Wayne P., to American Can Company. Fibrous web structure and its manufacture. 4,315,721, Cl. 425-81.100.
Sotomura, Tadashi: *See*—
Sekido, Satoshi; Sotomura, Tadashi; and Nakai, Muneaki, 4,315,975, Cl. 429-191.000.
Southwire Company: *See*—
Odle, Robert R.; Berry, Milton E.; Brunson, William W.; Burson, William R.; Cofer, Daniel B.; and Richards, Roy, 4,315,775, Cl. 75-76.000.
Sparling, Darel L. Truck assembly. 4,315,653, Cl. 296-63.000.
Spector, George: *See*—
Gabor, Charles; and Spector, George, 4,315,453, Cl. 84-422.00R.
Tartaglia, Lawrence; and Spector, George, 4,315,447, Cl. 81-421.000.
Spencer, George A. Current rating verification system. 4,316,187, Cl. 340-664.000.
Sperry Corporation: *See*—
Doyle, William D., 4,316,263, Cl. 365-12.000.
Greenig, Nelson L.; and Shelton, Richard M., 4,316,199, Cl. 346-160.000.
Kaminski, David G., 4,316,148, Cl. 328-55.000.
Randall, Stephen E.; and Overly, Carl G., 4,315,395, Cl. 56-10.100.
Spitfire Tool & Machine, Co. Inc.: *See*—
Day, Lawrence, 4,315,383, Cl. 51-118.000.
Sprague Electric Company: *See*—
Arora, Mulk A., 4,315,806, Cl. 204-129.400.
Sprecker, Mark A., to International Flavors & Fragrances Inc. Flavoring with norbornyl ethers and esters. 4,315,945, Cl. 426-3.000.
Sprecker, Mark A.: *See*—
Wiegers, Wilhelmus J.; Sprecker, Mark A.; Watkins, Hugh; Vock, Manfred H.; and Schmitt, Frederick L., 4,315,951, Cl. 426-536.000.
Stabilus GmbH: *See*—
Freitag, Herbert; and Schnitzius, Klaus, 4,316,098, Cl. 307-119.000.
Stabinsky, Leon: *See*—
Webber, William T.; and Stabinsky, Leon, 4,315,490, Cl. 123-275.000.
Staendeke, Horst; Adam, Wilhelm; Dany, Franz-Josef; and Kandler, Joachim, to Hoechst Aktiengesellschaft. Stabilized red phosphorus and process for its manufacture. 4,315,897, Cl. 423-274.000.
Stal Refrigeration AB: *See*—
Brandin, Ivar, 4,315,410, Cl. 62-66.000.
Stallings, Jimmie L. Continuous circulation apparatus for air drilling well bore operations. 4,315,553, Cl. 175-207.000.
Stamicarbon, B.V.: *See*—
Van Gasse, Rene L. E., 4,315,884, Cl. 264-255.000.
Standard Oil Company: *See*—
Miller, Arthur F.; Callahan, James L.; and Shaw, Wilfrid G., 4,315,838, Cl. 252-448.000.
Standard Oil Company (Indiana): *See*—
Hall, Robert D., 4,315,656, Cl. 299-1.000.
Standard Oil Company (Ohio): *See*—
Bremer, Noel J.; and Dria, Dennis E., 4,315,864, Cl. 260-346.750.
Stankowski, Hans-Werner: *See*—
Merki, Josef; Stankowski, Hans-Werner; and Stockli, Franz, 4,316,111, Cl. 310-218.000.
Stanley, Robert K., to Techniprises Limited. Strand crimping treatment. 4,315,355, Cl. 28-251.000.
Starck, Christian, to La Telemecanique Electrique. Switch operating device. 4,316,063, Cl. 200-16.00C.
Starks, Charles M., to Conoco Inc. Preparation of cation-exchange resin. 4,315,995, Cl. 521-33.000.
Staron, Philippe J.: *See*—
Barbier, Maurice G. Y.; and Staron, Philippe J., 4,316,266, Cl. 367-21.000.
Stauch, Dieter, heir: *See*—
Stauch, Philipp E., deceased; Stauch, Thea, heir; and Stauch, Dieter, heir, 4,315,560, Cl. 181-275.000.
Stauch, Philipp E., deceased; by Stauch, Thea, heir; and by Stauch, Dieter, heir. Silencer for aircraft piston engine. 4,315,560, Cl. 181-275.000.
Stauch, Thea, heir: *See*—
Stauch, Philipp E., deceased; Stauch, Thea, heir; and Stauch, Dieter, heir, 4,315,560, Cl. 181-275.000.
Stauffer Chemical Company: *See*—
Large, George B., 4,315,765, Cl. 71-87.000.
Stecker, Walter: *See*—
Adolph, Erich; Bayrak, Unal; and Stecker, Walter, 4,316,138, Cl. 323-364.000.
Osterloh, Manfred; Putz, Otto; and Stecker, Walter, 4,316,137, Cl. 323-364.000.
Steffek, Leonard J.; and Drake, Stanley, to United States of America, Army. Rotating dual frequency range antenna system. 4,316,195, Cl. 343-758.000.
Stegenga, Philip D.; and VandenBrink, Wayne, to Donnelly Mirrors, Inc. Constant torque pivot assembly. 4,315,614, Cl. 248-479.000.
Steinberg, Ronald F.: *See*—
Sawatari, Takeo; Keating, Patrick N.; Steinberg, Ronald F.; and Mueller, Rolf K., 4,316,191, Cl. 343-16.00R.
Stephen A. Young Corporation: *See*—
Messick, Walker; and Christiansen, Gerald E., 4,315,525, Cl. 137-625.400.
Stephenson, Tom, to Petroleum Meter & Pump Co., Inc. Conversion assembly for dispensing pumps and the like. 4,315,438, Cl. 74-352.000.
Steuernagel, Hans H.: *See*—
Hoyer, Ernst; Steuernagel, Hans H.; and Wagner, Dieter, 4,315,865, Cl. 260-373.000.
Stillman, Suzanne: *See*—
Nawash, Michael S.; Stillman, Suzanne; and Mason, Robert S., 4,315,513, Cl. 128-348.000.
Stockli, Franz: *See*—
Merki, Josef; Stankowski, Hans-Werner; and Stockli, Franz, 4,316,111, Cl. 310-218.000.
Stokker, Gerald E.: *See*—
Cragoe, Edward J., Jr.; Stokker, Gerald E.; and Gould, Norman P., 4,316,043, Cl. 560-53.000.
Stoller Enterprises, Inc.: *See*—
Stoller, Jerry H.; and Hartung, Harold A., 4,315,763, Cl. 71-29.000.
Stoller, Jerry H.; and Hartung, Harold A., to Stoller Enterprises, Inc. High analysis liquid fertilizers. 4,315,763, Cl. 71-29.000.

Stolz, Hermann, to MATO Maschinen- und Metallwarenfabrik Curt Matthaei GmbH & Co. KG. Connecting strip for conveyor belts. 4,315,349, Cl. 24-33.00C.

Stone, Glen; and Haglund, Gary J., to Sherwood Medical Industries, Inc. Fluid collection device having phase partitioning means. 4,315,892, Cl. 422-101.000.

Stopar, Victor: *See*—
Muller, Ortwin; and Stopar, Victor, 4,315,672, Cl. 351-13.000.

Storey, Moorfield, Jr.: *See*—
Jones, Philip; and Storey, Moorfield, Jr., 4,316,193, Cl. 343-112.00D.

Stout, Alton H. Light tracking detectors and housing therefor. 4,316,084, Cl. 250-203.00R.

Strang, Robert E., Sr., to Injection Plastics & Manufacturing Co. Baffle for alcohol stills. 4,315,803, Cl. 202-158.000.

Streifer, William: *See*—
Scifres, Donald R.; Streifer, William; and Burnham, Robert D., 4,316,156, Cl. 372-50.000.

Stuivenwold, Paulus A.; and Van Timmeren, Kornelis, to Shell Oil Company. Sensor for detecting particles in a fluid flow. 4,315,428, Cl. 73-61.00R.

Sturges, Robert H., Jr., to Westinghouse Electric Corp. Electromechanical display apparatus. 4,316,189, Cl. 340-870.340.

Styles, Virgil L.: *See*—
Morrison, Robert W., Jr.; Mallory, William R.; and Styles, Virgil L., 4,315,932, Cl. 424-251.000.

Subramaniam, Ambati, to NCR Canada Ltd. - NCR Canada LTEE. Method and apparatus for compression and decompression of digital image data. 4,316,222, Cl. 358-261.000.

Suda, Hiroharu: *See*—
Hideshima, Keiji; Koyanagi, Haruo; Suda, Hiroharu; Sawano, Hirokazu; Takaki, Masaoki; Yamanaka, Kunio; Yasuda, Isao; and Asada, Kazuyoshi, 4,316,260, Cl. 364-900.000.

Sugimoto, Hiroaki: *See*—
Imai, Shozaburo; and Sugimoto, Hiroaki, 4,316,004, Cl. 528-126.000.

Sugishita, Nobuyuki: *See*—
Fujiwara, Hideo; Kudo, Mitsuhiro; Tamura, Teizou; Sugishita, Nobuyuki; Shiroishi, Yoshihiro; Kimura, Takeshi; Shinagawa, Kiminari; and Kumasaka, Noriyuki, 4,316,228, Cl. 360-127.000.

Sugiura, Susumu; and Sato, Tadashi, to Canon Kabushiki Kaisha. Copying method and apparatus. 4,315,684, Cl. 355-14.00R.

Sugiyama, Kiyoshi: *See*—
Tokunaga, Yukio; Sugiyama, Kiyoshi; and Seto, Tadao, 4,315,643, Cl. 282-27.500.

Sulzer Brothers Limited: *See*—
Baumann, Heinz, 4,315,529, Cl. 139-1.00C.
Kawamura, Tomotsuchi; and Haneda, Hisao, 4,315,485, Cl. 122-406.00R.
Ramseyer, Fritz, 4,315,388, Cl. 52-173.00R.

Sumida, Seizo: *See*—
Kosuge, Yoshiaki; Yoshida, Ryo; Sumida, Seizo; Oshita, Hirofumi; Otsuki, Soji; and Kamoshita, Katsuzo, 4,315,768, Cl. 71-98.000.

Sumitomo Chemical Company, Limited: *See*—
Imai, Shozaburo; and Sugimoto, Hiroaki, 4,316,004, Cl. 528-126.000.
Katsube, Junki; Ono, Keiichi; and Kawakami, Hajime, 4,316,028, Cl. 546-51.000.
Kosuge, Yoshiaki; Yoshida, Ryo; Sumida, Seizo; Oshita, Hirofumi; Otsuki, Soji; and Kamoshita, Katsuzo, 4,315,768, Cl. 71-98.000.

Sumitomo Electric Industries, Ltd.: *See*—
Horikawa, Takahiro; Hibino, Yutaka; and Maki, Seiichi, 4,315,883, Cl. 264-174.000.

Sumitomo Metal Industries, Ltd.: *See*—
Senjo, Teizo; and Kobayashi, Makio, 4,315,872, Cl. 261-113.000.

Sundelin, Robert N.: *See*—
Moore, Robert A.; and Sundelin, Robert N., 4,316,161, Cl. 333-141.000.

Sundstrand Corporation: *See*—
Cordner, Michael A., 4,315,442, Cl. 74-687.000.

Suplinskas, Raymond J.; and Henze, Thomas W., to Avco Corporation. Silicon coated silicon carbide filaments and method. 4,315,968, Cl. 428-367.000.

Surkamp, Paul: *See*—
Brock, Josef; and Surkamp, Paul, 4,315,530, Cl. 139-76.000.

Sutton, Stephen J.; Creager, John E.; and Gelenius, Robert B., to General Motors Corporation. Threshold detector for a condition indication. 4,316,174, Cl. 340-52.00R.

Swab, John M., to General Electric Company. Apparatus for sequential row injection readout of CID imagers. 4,316,221, Cl. 358-213.000.

Swedenberg, Clyde J.: *See*—
French, David M.; Rosborough, J. T. L.; and Swedenberg, Clyde J., 4,315,830, Cl. 252-182.000.

Sweetheart Plastics, Inc.: *See*—
Mack, Anthony C.; Phillips, Robert A.; and Shumrak, George K., 4,316,078, Cl. 219-386.000.

Swozil, Adolf: *See*—
Schwarz, Erwin; and Swozil, Adolf, 4,315,575, Cl. 220-89.00A.

Sylvest, Erik, to Icopal Baustoffe, Firma. Roof cover sheet material. 4,315,392, Cl. 52-309.100.

Syntex (U.S.A.) Inc.: *See*—
Nash, John E.; and Knopp, Arthur A., 4,315,742, Cl. 433-86.000.

Synthelabo: *See*—
Rossey, Guy, 4,316,029, Cl. 546-51.000.

Syverson, Charles D. Wind power generator and control therefore. 4,316,096, Cl. 290-44.000.

Szonntagh, Eugene L., to Honeywell Inc. Gas colorific content analyzing apparatus. 4,315,430, Cl. 73-190.0CV.

Tabata, Junichi, to Kabushiki Kaisha Daini Seikosha. Charging control circuit for electronic timepiece. 4,316,275, Cl. 368-66.000.

Tachi, Akihiro: *See*—
Tomoshige, Toru; Furuta, Harumi; Tachi, Akihiro; and Kawamoto, Nobuyuki, 4,315,863, Cl. 260-346.740.

Taddeo, Michael: *See*—
Gallant, Stuart L.; Caron, Paul R.; Dunn, Stanley M.; Palmer, Walter E.; Schmitt, Ernest G.; and Taddeo, Michael, 4,316,249, Cl. 364-417.000.

Tadiran Israel Electronics Industries Ltd.: *See*—
Vardi, Isaih; Kimchi, Yigal; and Ben-Dror, Jonathan, 4,315,411, Cl. 62-112.000.

Tadokoro, Tomoo; and Okimoto, Haruo, to Toyo Kogyo Co., Ltd. Rotary piston engine having supercharging means. 4,315,488, Cl. 123-213.000.

Tadokoro, Tomoo; Okimoto, Haruo; Honda, Yasuo; Nomura, Hiroshi; and Yoshimura, Masato, to Toyo Kogyo Co., Ltd. Rotary piston engine having supercharging means. 4,315,489, Cl. 123-213.000.

Taglieber, Volker: *See*—
Kummer, Rudolf; Weiss, Franz-Josef; Schneider, Heinz-Walter; and Taglieber, Volker, 4,316,047, Cl. 560-206.000.

Taira, Eiichi: *See*—
Yasumoto, Yoshio; Tomimoto, Tetsuo; and Taira, Eiichi, 4,316,215, Cl. 358-37.000.

Takacs, Istvan; Kerey, Gyorgy; Illes, Janos; Rudolf, Peter; Gere, Pal; Czebe, Laszlo; and Neszmelyi, Erzsebet, to Richter Gedeon Vegyeszeti Gyar RT. Process for the production of organ extracts with high herparin content. 4,315,923, Cl. 424-183.000.

Takada, Juichiro. Transfer device for passive vehicle occupant restraint belts. 4,315,638, Cl. 280-803.000.

Takagi, Masatomo; Ogaki, Mitsuo; and Hikita, Sadao, to Tokyo Shibaura Denki Kabushiki Kaisha. Enclosed switchboards. 4,316,234, Cl. 361-342.000.

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Ishimitsu, Keiichi; Kasahara, Isamu; Yamada, Tomio; Matsuda, Michihiko; Takahashi, Hidemitsu; and Soma, Shuichi, 4,316,044, Cl. 560-105.000.

Takahashi, Hiroshi; Tsuyama, Koichi; Uozu, Nobuo; and Fujikura, Makoto, to Hitachi Chemical Company, Ltd. Process for preparing chemically platable thermosetting powder coating. 4,315,845, Cl. 260-42.280.

Takahashi, Kotei; Endo, Teruo; Kawaguchi, Masayuki; and Sakamoto, Kenichi, to Nissan Motor Company, Limited. Coupling sleeve. 4,315,698, Cl. 403-59.000.

Takahashi, Masao: *See*—
Hattori, Katsuhide; Fukatsu, Yoshiaki; and Takahashi, Masao, 4,315,784, Cl. 149-2.000.
Hattori, Katsuhide; Fukatsu, Yoshiaki; and Takahashi, Masao, 4,315,787, Cl. 149-2.000.

Takahashi, Masaoki: *See*—
Inoue, Kazumi; Tono, Shunzo; and Takahashi, Masaoki, 4,315,619, Cl. 266-89.000.

Takahashi, Noriyoshi: *See*—
Sato, Masaki; Okuda, Hironori; Ito, Motoya; Makino, Yuji; Wachi, Yasuyuki; Takahashi, Noriyoshi; and Watanabe, Masatoshi, 4,316,113, Cl. 310-262.000.

Takahashi, Susumu: *See*—
Okazaki, Shinji; Mochiji, Kozo; Takahashi, Susumu; and Murai, Fumio, 4,315,984, Cl. 430-296.000.

Takaki, Masaoki: *See*—
Hideshima, Keiji; Koyanagi, Haruo; Suda, Hiroharu; Sawano, Hirokazu; Takaki, Masaoki; Yamanaka, Kunio; Yasuda, Isao; and Asada, Kazuyoshi, 4,316,260, Cl. 364-900.000.

Takanohashi, Kunio: *See*—
Yoshimura, Yoshinobu; Morikawa, Nobuhide; and Takanohashi, Kunio, 4,316,018, Cl. 544-27.000.

Takasugi, Hisashi: *See*—
Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, 4,316,019, Cl. 544-28.000.

Takaya, Takao; Masugi, Takashi; Takasugi, Hisashi; and Kochi, Hiromu, to Fujisawa Pharmaceutical Co., Ltd. Preparation of syn-isomer of 3-alkanoyloxymethyl-7-(2-alkoxyimino-2-thiazolylacetamido-3-cephem-4-carboxylic acid compounds. 4,316,019, Cl. 544-28.000.

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Saito, Takeo; Ishida, Hiroaki; Segawa, Takashi; Nagaoka, Shinji; and Takazawa, Yuzuru, 4,316,085, Cl. 250-204.000.

Takeda Chemical Industries, Ltd.: *See*—
Fujino, Masahiko; and Kitada, Chieko, 4,315,853, Cl. 260-112.50R.
Higashide, Eiji; Asai, Mitsuko; and Hasegawa, Tory, 4,315,989, Cl. 435-253.000.
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Takeda, Keiso, to Toyota Jidosha Kogyo Kabushiki Kaisha. Fuel injection type internal combustion engine. 4,315,491, Cl. 123-478.000.

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Aoki, Masakazu; Takemoto, Iwao; Kubo, Masaharu; and Izawa, Ryuichi, 4,316,205, Cl. 357-30.000.

Takenoya, Hideaki: *See*—
Makabe, Hachiro; Watanabe, Kazuo; Takenoya, Hideaki; Shomura, Eiichi; and Tonomura, Yoshinobu, 4,315,472, Cl. 112-158.00E.

Takeuchi, Tomio: *See—*
Oki, Toshikazu; Yoshimoto, Akihiro; Matsuzawa, Yasue; Inui, Taiji; Takeuchi, Tomio; and Umezawa, Hamao, 4,316,011, Cl. 536-17.00A.
Talbot, Daniel B., to DBX, Inc. Multiplier circuit. 4,316,107, Cl. 307-492.000.
Tallerico, William A.: *See—*
Hubbard, James R.; and Tallerico, William A., 4,316,197, Cl. 346-140.00R.
Talres Development (N.A.) N.V.: *See—*
Inkson, Michael B.; and Wilkinson, Clive K., 4,316,012, Cl. 536-114.000.
Tamers, Murry A., to Intersci Corporation. Device for the identification of volatile fluids. 4,315,890, Cl. 422-58.000.
Tamura, Teizou: *See—*
Fujiwara, Hideo; Kudo, Mitsuhiro; Tamura, Teizou; Sugishita, Nobuyuki; Shiroishi, Yoshihiro; Kimura, Takeshi; Shinagawa, Kiminari; and Kumasaka, Noriyuki, 4,316,228, Cl. 360-127.000.
Tanabe, Takeshi, to Sharp Kabushiki Kaisha. Cooking utensil controlled by gas sensor output and thermistor output. 4,316,068, Cl. 219-10.55B.
Tanaka, Chiaki: *See—*
Hiratsuka, Motoki; Tanaka, Chiaki; and Naito, Nagayoshi, 4,315,882, Cl. 264-171.000.
Tanaka, Eiichi; and Ishibashi, Noboru, to Matsushita Electric Industrial Co., Ltd. Gas burner. 4,315,729, Cl. 431-75.000.
Tanaka, Hiroaki: *See—*
Akita, Sigeyuki; and Tanaka, Hiroaki, 4,316,158, Cl. 331-111.000.
Tanaka, Hirotoshi; Kawajiri, Yoshiki; Chiba, Kouetsu; Hori, Ryoichi; and Itoh, Kiyoo, to Hitachi, Ltd. Memory device with high speed memory cell selection mechanism. 4,316,265, Cl. 365-203.000.
Tancrell, Roger H.: *See—*
Wilson, David T.; Tancrell, Roger H.; and Callerame, Joseph, 4,316,115, Cl. 310-327.000.
Tangorra, Giorgio; and Magnabosco, Lino, to Industrie Pirelli S.p.A. Energy accumulator. 4,315,562, Cl. 185-37.000.
Tann, David, to Electro-Mechanical Products. Fluid pressure actuator with proximity position sensor. 4,316,145, Cl. 324-208.000.
Tanno, Norimichi: *See—*
Taoka, Fumio; Tanno, Norimichi; and Watanabe, Hideo, 4,315,724, Cl. 425-130.000.
Taoka, Fumio; Tanno, Norimichi; and Watanabe, Hideo, to Kamaya Kagaku Kogyo Co., Ltd. Process and machine for multi-color injection molding. 4,315,724, Cl. 425-130.000.
Tarman, Paul B.: *See—*
Patel, Jitendra G.; Sandstrom, William A.; and Tarman, Paul B., 4,315,758, Cl. 48-197.00R.
Tarng, Ming L., to RCA Corporation. Method of making semiconductor device with passivated rectifying junctions having hydrogenated amorphous regions. 4,315,782, Cl. 148-1.500.
Tartaglia, Lawrence; and Spector, George. No mar pliers. 4,315,447, Cl. 81-421.000.
Tate, David L.: *See—*
Exley, John T.; Kuintzle, Charles, Jr.; and Tate, David L., 4,315,714, Cl. 415-207.000.
Tateishi, Iwao: *See—*
Washizuka, Isamu; and Tateishi, Iwao, 4,316,081, Cl. 235-92.0DN.
Taus, Christian: *See—*
Rau, Willy; and Taus, Christian, 4,315,547, Cl. 172-1.000.
Taylor, Frank E. Folding two-wheeled hand truck. 4,315,632, Cl. 280-40.000.
Taylor, Paul D.; and Mocella, Michael T., to Atlantic Richfield Company. Recovery of molybdenum as an aqueous solution from spent catalyst. 4,315,896, Cl. 423-54.000.
Taylor, Peter A. J.; and Hammond, George W., to Massey-Ferguson Services N.V. Sound deadening. 4,315,971, Cl. 428-419.000.
TDK Electronics Co., Ltd.: *See—*
Miyabayashi, Susumu; and Kaji, Takeyuki, 4,316,171, Cl. 338-21.000.
Teche, Andre: *See—*
Martel, Jacques; Tessier, Jean; Demoute, Jean-Pierre; and Teche, Andre, 4,315,868, Cl. 260-465.00D.
Techniprises Limited: *See—*
Stanley, Robert K., 4,315,355, Cl. 28-251.000.
Tektronix, Inc.: *See—*
Crosby, Philip S., 4,316,150, Cl. 331-1.00A.
Teledyne Industries, Inc.: *See—*
Hawk, Charles E., 4,315,431, Cl. 73-203.000.
Telegan Limited: *See—*
Watson, Kenneth, 4,315,730, Cl. 431-76.000.
Telescope Folding Furniture Co., Inc., The: *See—*
Vanderminden, Robert D., 4,315,467, Cl. 108-157.000.
Tenner, Wayne V.: *See—*
Boeddeker, David R.; and Tenner, Wayne V., 4,315,633, Cl. 280-79.300.
Teranishi, Tsuneharu; and Higuchi, Takeshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Windings for electrical inductive apparatus. 4,316,169, Cl. 336-70.000.
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Martel, Jacques; Tessier, Jean; Demoute, Jean-Pierre; and Teche, Andre, 4,315,868, Cl. 260-465.00D.
Martel, Jacques; and Tessier, Jean, 4,315,943, Cl. 424-304.000.
Texaco Inc.: *See—*
Knifton, John F., 4,315,993, Cl. 518-700.000.
Knifton, John F., 4,315,994, Cl. 518-701.000.
Schlicht, Raymond C.; Levine, Stephen A.; and Chafetz, Harry, 4,315,826, Cl. 252-46.400.
Texas Instruments Incorporated: *See—*
Carlson, Richard H., 4,316,077, Cl. 219-370.000.
Iwamoto, Eisaburo, 4,316,247, Cl. 364-200.000.
Ulug, Mehmet E., 4,316,283, Cl. 370-94.000.
Texon Inc.: *See—*
Bodendorf, Warren J., 4,315,798, Cl. 162-161.000.
Theiler, Richard F.: *See—*
Sleeth, Rhule B.; Theiler, Richard F.; and Rendek, Robert B., 4,315,948, Cl. 426-266.000.
Theriault, Gerald E.: *See—*
Muterspaugh, Max W.; and Theriault, Gerald E., 4,316,220, Cl. 358-196.000.
Thiery, Daniel: *See—*
Morin, Bruno; and Thiery, Daniel, 4,315,831, Cl. 252-628.000.
Thomas & Betts Corporation: *See—*
Basile, Rocco F., 4,315,368, Cl. 30-124.000.
Greenwood, William S.; Kuo, Ted L. C.; and Piasecki, Raymond F., 4,315,662, Cl. 339-97.00C.
Thomas, John L., to British Petroleum Company Limited, The. Anti-pollution equipment. 4,315,818, Cl. 210-242.300.
Thomas, Rudy V.: *See—*
Booth, Frederick C.; Frantom, Richard L.; and Thomas, Rudy V., 4,315,639, Cl. 280-803.000.
Thomson-CSF: *See—*
Antoine, Robert; Bricot, Claude; and Robin, Gerard, 4,315,723, Cl. 425-110.000.
Berger, Jean L., 4,316,258, Cl. 364-602.000.
Posseme, Gilles, 4,316,253, Cl. 364-432.000.
Trocellier, Roger; and Reymond, Jean C., 4,315,690, Cl. 356-152.000.
Volluet, Gerard; and Cohen, Daniel, 4,316,162, Cl. 333-201.000.
Thurman, Duane E., to Union Carbide Corporation. N-Aminosulfenyl carbamate compounds, compositions and use. 4,315,928, Cl. 424-248.500.
Times Mirror Company, The: *See—*
Darnall, John C., 4,315,886, Cl. 264-318.000.
Timoney, Seamus G. Hub reduction gear unit. 4,315,556, Cl. 180-255.000.
Tirosh, Regine: *See—*
Fridlender, Bertold; Ben-Moyal, Zohar; Olshevsky, Udi; and Tirosh, Regine, 4,315,907, Cl. 424-1.000.
Tmaschinen Forschungsvereinigung Verbrennungskra Maschinen: *See—*
Glienicke, Joachim, 4,315,660, Cl. 308-9.000.
TMI Sales Corporation: *See—*
Donnenberg, Leon; and Draxler, Helmut J., 4,315,527, Cl. 138-30.000.
To Kwan, William C.: *See—*
Pidcock, Anthony; Close, Desmond; and To Kwan, William C., 4,315,405, Cl. 60-752.000.
Toa Nenryo Kogyo Kabushiki Kaisha: *See—*
Onodera, Takashi; Komine, Kikuji; Ohashi, Fumio; and Naito, Tsutomo, 4,315,813, Cl. 208-33.000.
Todd, Paul H., Jr.; and Haley, Howard E., to KALSEC, Inc. Liquid seasoning compositions II. 4,315,947, Cl. 426-250.000.
Tohgei, Ryoiku, to Fujitsu Limited. Insulated gate field effect transistor. 4,316,203, Cl. 357-23.000.
Tokiguchi, Katsumi: *See—*
Sakudo, Noriyuki; Tokiguchi, Katsumi; Koike, Hidemi; and Kanomata, Ichiro, 4,316,090, Cl. 250-423.00R.
Tokunaga, Yukio; Sugiyama, Kiyoshi; and Seto, Tadao, to Nippon Telegraph & Telephone Public Corp.; and Fuji Kagakushi Kogyo Co., Ltd. Heat-sensitive transfer element. 4,315,643, Cl. 282-27.500.
Tokyo Organic Chemical Industries, Ltd.: *See—*
Kuchikata, Masuo; Tsuyuki, Hiroshi; Furukawa, Toshio; Nitta, Yoshihiro; and Kuyama, Hiroshi, 4,315,846, Cl. 260-429.900.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Miyamoto, Tsutomu; and Matsudaira, Takayuki, 4,316,131, Cl. 318-612.000.
Ohtomo, Atushi, 4,315,526, Cl. 137-630.140.
Sakaue, Tatsuo; and Iida, Tetsuya, 4,316,100, Cl. 307-221.00D.
Takagi, Masatomo; Ogaki, Mitsuo; and Hikita, Sadao, 4,316,234, Cl. 361-342.000.
Teranishi, Tsuneharu; and Higuchi, Takeshi, 4,316,169, Cl. 336-70.000.
Yamaguchi, Hiroyasu, 4,316,149, Cl. 330-268.000.
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Yasumoto, Yoshio; Tomimoto, Tetsuo; and Taira, Eiichi, 4,316,215, Cl. 358-37.000.
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Nakajima, Takayoshi; and Tomioka, Susumu, 4,315,881, Cl. 264-171.000.
Tomoshige, Toru; Furuta, Harumi; Tachi, Akihiro; and Kawamoto, Nobuyuki, to Mitsui Petrochemical Industries, Ltd. Highly maleated wax and process for producing the same. 4,315,863, Cl. 260-346.740.
Tomy Corporation: *See—*
Yoshida, Kanji, 4,315,650, Cl. 294-19.00R.
Tongel, Richard R., to PPG Industries, Inc. Method of transferring mat from a forming surface station to a bonding station. 4,315,789, Cl. 156-181.000.
Tono, Shunzo: *See—*
Inoue, Kazumi; Tono, Shunzo; and Takahashi, Masaoki, 4,315,619, Cl. 266-89.000.

Tonomura, Yoshinobu: *See—*
Makabe, Hachiro; Watanabe, Kazuo; Takenoya, Hideaki; Shomura, Eiichi; and Tonomura, Yoshinobu, 4,315,472, Cl. 112-158.00E.
Toole, Monte M.; and Champagne, Robert B., to Atomel Corporation. Silicon wafer steam oxidizing apparatus. 4,315,479, Cl. 118-726.000.
Toray Industries, Inc.: *See—*
Hiratsuka, Motoki; Tanaka, Chiaki; and Naito, Nagayoshi, 4,315,882, Cl. 264-171.000.
Torre, Giancarlo D.; and Avesani, Luigi, to Rockwell-Rimoldi, S.p.A. Workpiece guide control for sewing units. 4,315,470, Cl. 112-121.150.
Torre, Giancarlo D.; and de Simone, Vittorio, to Rockwell-Rimoldi, S.p.A. Workpiece guide for sewing machines. 4,315,471, Cl. 112-153.000.
Torre, Giancarlo D., to Rockwell-Rimoldi, S.p.A. Modular bench for sewing machine. 4,315,473, Cl. 112-217.100.
Toth, Arpad G., to Northern Telecom Limited. Gain controller for a teleconferencing bridge. 4,316,059, Cl. 179-1.0CN.
Totten, George E.; and Williams, Thomas C., to Union Carbide Corporation. Liquid crystal silanes. 4,316,041, Cl. 556-420.000.
Toyo Engineering Corporation: *See—*
Murata, Sadao; and Numata, Tadanobu, 4,315,541, Cl. 165-94.000.
Nozawa, Shinkichi; and Miyashita, Kenjiro, 4,315,900, Cl. 423-359.000.
Toyo Kogyo Co., Ltd.: *See—*
Tadokoro, Tomoo; and Okimoto, Haruo, 4,315,488, Cl. 123-213.000.
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Ushida, Yoshihisa; Amimoto, Yoshikatu; Toyota, Akinori; and Kashiwa, Norio, 4,315,874, Cl. 264-5.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Hayashi, Hideyuki; and Okuma, Shigeru, 4,315,563, Cl. 188-73.100.
Kubo, Seitoku; Kuramochi, Koujiro; and Kyushima, Tatsuo, 4,315,443, Cl. 74-695.000.
Numazawa, Akio; and Katayama, Nobuaki, 4,315,564, Cl. 192-53.00F.
Sakamaki, Hiroshi; Maeda, Toshiyuki; Ushijima, Fumihiro; and Saitou, Tadashi, 4,315,719, Cl. 418-15.000.
Takeda, Keiso, 4,315,491, Cl. 123-478.000.
Transamerica DeLaval Inc.: *See—*
McCabe, Garry-Owen; and Milish, William P., 4,315,436, Cl. 73-861.540.
Tremba, Joseph A.: *See—*
Gee, Thomas A.; and Tremba, Joseph A., 4,316,176, Cl. 340-58.000.
Trenkle, Robert W.; Mookherjee, Braja D.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, to International Flavors & Fragrances Inc. Process for augmenting or enhancing the aroma or taste of raspberry flavored foodstuffs using 2,6,6-trimethylcyclohexene derivatives. 4,315,953, Cl. 426-538.000.
Trocellier, Roger; and Reymond, Jean C., to Thomson-CSF. Arrangement for locating radiating sources. 4,315,690, Cl. 356-152.000.
TRW Inc.: *See—*
Blazek, William S., 4,315,537, Cl. 164-27.000.
English, William D.; and Chew, William M., 4,315,786, Cl. 149-22.000.
Haller, Jacob S.; Mines, Gordon L.; and Mischnick, Meinert J., 4,315,367, Cl. 29-866.000.
Lathlaen, Richard A., 4,316,110, Cl. 310-155.000.
Rupp, Gerhard H.; and Schneider, Hans F., 4,316,065, Cl. 200-61.890.
Tsao, Utah, to Lummus Company, The. Process and apparatus for fractionating close boiling components of a multi-component system. 4,315,802, Cl. 202-158.000.
Tsuchiya, Keishin: *See—*
Mizuta, Toshiaki; Abe, Takeshi; Yoshihara, Ichiro; Saito, Kazuhito; and Tsuchiya, Keishin, 4,316,262, Cl. 364-900.000.
Tsuchiya, Shozo; Oshima, Akio; and Hayashi, Hideo, to Nippon Oil Company, Limited. Hot melt composition. 4,315,842, Cl. 260-28.50B.
Tsunefuji, Katsuhiko, to Olympus Optical Company Ltd. Electrical shutter of electromagnetic release type for camera having adjustable delay circuit for adjusting the precision of the electrical shutter. 4,315,678, Cl. 354-51.000.
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Takahashi, Hiroshi; Tsuyama, Koichi; Uozu, Nobuo; and Fujikura, Makoto, 4,315,845, Cl. 260-42.280.
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Tyer, Robert C.; Fitch, Robert E.; and Tucker, Gordon H., 4,315,468, Cl. 110-101.0CF.
Turcsan, Istvan: *See—*
Lugosi, Gyorgy; Simay, Antal; Bodnar, Janos; Turcsan, Istvan; Jelinek, Istvan; Somfai, Eva; and Simandi, Laszlo, 4,315,861, Cl. 260-340.90R.
Turek, Mitchell C.; and Garab, H. Gary, to Albany International Corp. Adjustable deckle. 4,315,799, Cl. 162-353.000.
Turner, Carlton E.: *See—*
Elsohly, Mahmoud A.; and Turner, Carlton E., 4,315,862, Cl. 260-345.200.
Tyer, Robert C.; Fitch, Robert E.; and Tucker, Gordon H., to Boeing Company, The. Control system for a single auger starved-air combustor. 4,315,468, Cl. 110-101.0CF.
Tyler, Leslie B.: *See—*
Adams, Robert W.; and Tyler, Leslie B., 4,316,060, Cl. 179-1.00D.
Tyler Refrigeration Corporation: *See—*
Ibrahim, Fayez F., 4,315,414, Cl. 62-231.000.
Uchiyama, Yasuji; Nakada, Akira; and Imamura, Akio, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument with automatic accompaniment device. 4,315,451, Cl. 84-1.030.
Ueda, Setsuo; Yasuda, Takashi; Yamada, Tokuyoshi; and Kobayashi, Shigeki, to Itoh Metal Abrasive Co., Ltd.; and Sato Technical Research Laboratory Ltd. Apparatus for producing spherical particles and fibers with a specially fixed size from melts. 4,315,720, Cl. 425-8.000.
Uehara, Norimasa: *See—*
Akisue, Osamu; Yamada, Teruaki; Matsuo, Munetsugu; and Uehara, Norimasa, 4,315,783, Cl. 148-12.00C.
Ueno, Kimitoshi; and Yoshida, Toshio. Flux composition for ceramic color, containing no harmful heavy metal. 4,315,778, Cl. 106-19.000.
Ueno, Masataka: *See—*
Nishiguchi, Fumio; Ueno, Masataka; and Kimura, Masanobu, 4,315,715, Cl. 415-207.000.
Ueno, Susumu: *See—*
Imada, Kiyoshi; Ueno, Susumu; and Nomura, Hirokazu, 4,315,808, Cl. 204-169.000.
Ufermann, Werner, to G. Siempelkamp GmbH & Co. Apparatus for forming a mat for making particleboard. 4,315,722, Cl. 425-83.100.
Ujikawa, Norihisa; Nakayama, Masaharu; and Matsushima, Masaru, to Nippon Oil and Fats Co., Ltd. Styrene resin-block copolymer composition. 4,315,997, Cl. 525-94.000.
Ulrich, Hannsjorg: *See—*
Adam, Wilhelm; Ulrich, Hannsjorg; Dany, Franz-Josef; and Kalteyer, Gerd, 4,315,961, Cl. 427-385.500.
Ulug, Mehmet E., to Texas Instruments Incorporated. Transparent intelligent network for data and voice. 4,316,283, Cl. 370-94.000.
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Oki, Toshikazu; Yoshimoto, Akihiro; Matsuzawa, Yasue; Inui, Taiji; Takeuchi, Tomio; and Umezawa, Hamao, 4,316,011, Cl. 536-17.00A.
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Conte, Alfred L., 4,315,976, Cl. 429-194.000.
Thurman, Duane E., 4,315,928, Cl. 424-248.500.
Totten, George E.; and Williams, Thomas C., 4,316,041, Cl. 556-420.000.
Union Oil Company of California: *See—*
Fenton, Donald M.; and Vaell, Raoul P., 4,315,903, Cl. 423-573.00R.
Union Siderurgique du nord et de L'est de la France ("USINOR"): *See—*
Pawlowski, Jean, 4,315,618, Cl. 266-69.000.
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Agriculture: *See—*
Evans, Gary W., 4,315,927, Cl. 424-245.000.
Freedman, Bernard; Powell, Richard G.; and Smith, Cecil R., Jr., 4,315,929, Cl. 424-248.540.
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Brodman, Bruce W.; Devine, Michael P.; and Schwartz, Stuart, 4,315,785, Cl. 149-19.800.
De Santis, Charles M.; and Wills, John R., 4,316,194, Cl. 343-700.0MS.
Eastman, Marcus R., 4,315,434, Cl. 73-517.00B.
Edelman, Seymour; and Payne, Beverly F., 4,315,433, Cl. 73-517.00R.
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Steffek, Leonard J.; and Drake, Stanley, 4,316,195, Cl. 343-758.000.
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Bruckenstein, Stanley; and Kosek, John A., 4,315,753, Cl. 23-232.00E.
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Kratzer, Reinhold H.; Paciorek, Kazimiera J. L.; Ito, Thomas I.; and Rosser, Robert W. Preparation of perfluorinated 1,2,4-oxadiazoles. 4,316,035, Cl. 548-131.000.
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Bens, Everett M.; and Fletcher, Aaron N., 4,315,905, Cl. 423-592.000.
Bottka, Nicholas; and Hills, Marian E., 4,316,206, Cl. 357-30.000.
Christou, Aristos; and Davey, John E., 4,316,201, Cl. 357-15.000.
Endicott, Donald L., Jr.; Walton, James M.; and Wernli, Robert L., 4,315,651, Cl. 294-83.00R.
French, David M.; Rosborough, J. T. L.; and Swedenberg, Clyde J., 4,315,830, Cl. 252-182.000.
McLean, James D.; Alpers, Frederick C.; Lanning, George R.; and Camphausen, Fred H., 4,315,609, Cl. 244-3.140.
U.S. Philips Corporation: *See—*
Palmer, Jan T., 4,315,366, Cl. 29-854.000.
Verwimp, Jozef K. P.; and Delobdere, Gabriel, 4,316,124, Cl. 315-205.000.
United Technologies Corporation: *See—*
Beal, George W.; Grant, James R., Jr.; and Hanloser, Kurt J., 4,315.401, Cl. 60-261.000.
University of Alberta, The Governors of the: *See—*
Frascara, Jorge; Jungkind, Walter; Ladan, Carol J.; and Nelson, Thomas M., 4,315,748, Cl. 434-159.000.
University of Kentucky Research Foundation: *See—*
Hussain, Anwar A.; Hirai, Shinichiro; and Bawarshi, Rima, 4,315,925, Cl. 424-239.000.

University of Mississippi, The: *See*—
Elsohly, Mahmoud A.; and Turner, Carlton E., 4,315,862, Cl. 260-345.200.
University of Rochester, The: *See*—
Peiffer, Dennis G.; and Deckman, Harry W., 4,315,958, Cl. 427-214.000.
Unkelbach, Karl-Heinz: *See*—
Ries, Guenter; Juengst, Klaus-Peter; Foerster, Siegfried; Graf, Franz; Lehmann, Wolfgang; Unkelbach, Karl-Heinz; and Dueren, Gottfried, 4,315,816, Cl. 209-223.00A.
UOP Inc.: *See*—
Winter, George R., III, 4,315,801, Cl. 196-14.520.
Uozu, Nobuo: *See*—
Takahashi, Hiroshi; Tsuyama, Koichi; Uozu, Nobuo; and Fujikura, Makoto, 4,315,845, Cl. 260-42.280.
Upjohn Company, The: *See*—
DeGeeter, Melvin J.; and McCall, John M., 4,315,930, Cl. 424-249.000.
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Giebel, Gerhard; and Klein, Rolf, 4,315,341, Cl. 12-10.500.
Vaalburg, Lawrence: *See*—
Mason, Charles R.; Osteen, David K.; and Vaalburg, Lawrence, 4,315,965, Cl. 428-198.000.
Vaell, Raoul P.: *See*—
Fenton, Donald M.; and Vaell, Raoul P., 4,315,903, Cl. 423-573.00R.
Vaiciulis, Thomas J.: *See*—
Silver, Jules; and Vaiciulis, Thomas J., 4,315,570, Cl. 206-221.000.
VandenBrink, Wayne: *See*—
Stegenga, Philip D.; and VandenBrink, Wayne, 4,315,614, Cl. 248-479.000.
Van Deraerschot, Raymond K. A., to A.S.E.D. Process for recovering the soot formed during the production of synthesis gas by partial oxidation of hydrocarbonaceous materials. 4,315,834, Cl. 252-373.000.
van der Lely, Ary; and Bom, Cornelis J. G. Overload couplings. 4,315,418, Cl. 64-28.00R.
van der Lely, Cornelis. Soil working machine with interconnected displaceable supports which maintain orientation. 4,315,549, Cl. 172-657.000.
Vanderminden, Robert D., to Telescope Folding Furniture Co., Inc., The. Collapsible cocktail table. 4,315,467, Cl. 108-157.000.
van der Tak, Josephus A. M. Steering system for a ship. 4,315,476, Cl. 114-151.000.
Vanderwyck, August H. B.: *See*—
Wang, Cheng-Chi; and Vanderwyck, August H. B., 4,315,477, Cl. 118-64.000.
Van Dover, Dennis W.; and Lindmark, Richard C., Jr., to H. B. Fuller Company. Manufacture of blanks for recording discs utilizing coextrusion and blanks and records made thereby. 4,315,878, Cl. 264-107.000.
Van Gasse, Rene L. E., to Stamicarbon, B.V. Process for the preparation of shaped articles. 4,315,884, Cl. 264-255.000.
Vanhoy, Gilbert W.: *See*—
French, David W.; Heisler, Robert W.; Maldarella, Antonio, Jr.; and Vanhoy, Gilbert W., 4,315,630, Cl. 277-207.00A.
Van Iten, Thomas P.: *See*—
Austin, Jared A.; and Van Iten, Thomas P., 4,315,347, Cl. 19-145.700.
Vanlerberghe, Guy: *See*—
Kalopissis, Gregoire; Vanlerberghe, Guy; and Sebag, Henri, 4,315,912, Cl. 424-70.000.
Van Soest, Hendrikus J. J.; and Mennen, Peter M. W., to Oce-Nederland B.V. Holder for electrographic developing powder. 4,315,581, Cl. 222-83.000.
van't Hullenaar, Adrian, deceased (by Hullenaar, A. van't, executrix), to Westinghouse Canada Limited. Own doppler nullifier for sonar system. 4,316,269, Cl. 367-90.000.
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Vardey, Lewis. Hollow heat exchanger tile. 4,315,497, Cl. 126-416.000.
Vardi, Isaih; Kimchi, Yigal; and Ben-Dror, Jonathan, to Tadiran Israel Electronics Industries Ltd. Alcohol trap. 4,315,411, Cl. 62-112.000.
Vareide, Dag; and Solheim, Odd E. Method and device for distributing liquid fuel to a fluidized bed. 4,315,469, Cl. 110-245.000.
Vargo, John V., Jr., to Koppers Company, Inc. Hammer mill rotor. 4,315,605, Cl. 241-192.000.
Vartanian, Gurgen P.: *See*—
Zagorodnaya, Galina A.; Khutoretsky, Garri M.; and Vartanian, Gurgen P., 4,316,114, Cl. 310-270.000.
Veb Jenapharm: *See*—
Huttenrauch, Reinhard, 4,315,909, Cl. 424-35.000.
Veenstra, Uiltje J., to Shell Oil Company. Manufacture of fibrous products. 4,315,880, Cl. 264-119.000.
Veitscher Magnesitwerke-Actien-Gesellschaft: *See*—
Guls, Hans-Jurgen, 4,315,992, Cl. 501-101.000.
Veldman, Donald R. Method and apparatus for making a self-thread creating fastener. 4,315,340, Cl. 10-10.00R.
Verplanke, Mattheus W. Apparatus for generating energy from a flowing medium. 4,315,713, Cl. 415-2.00R.
Verwimp, Jozef K. P.; and Deloddere, Gabriel, to U.S. Philips Corporation. Mixed light arrangement. 4,316,124, Cl. 315-205.000.
Videocolor, S.A.: *See*—
Lamoureux, Andre, 4,316,127, Cl. 315-408.000.
Vidotto, Graziano; Sellan, Febo; Bacchetta, Enzo; Mainardi, Sandro; and Benussi, Giovanni, to Montedison S.p.A. Thin film monomer removal from polyvinyl chloride latexes. 4,315,843, Cl. 260-29.6PT.
Vinals, Joaquin F.: *See*—
Trenkle, Robert W.; Mookherjee, Braja D.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,315,953, Cl. 426-538.000.
Vincent, Philippe, to Schlumberger Technology Corporation. Dip determination by statistical combination of displacements. 4,316,250, Cl. 364-422.000.
Visani, Francesco: *See*—
Rinaldi, Roberto; Govoni, Gabriele; and Visani, Francesco, 4,316,009, Cl. 528-502.000.
Vlasov, Sergei N.: *See*—
Ivanov, Valentin A.; Khodosh, Vladimir A.; Ostrovsky, Igor S.; Shenkman, Mikhail Y.; Koshelev, Jury A.; Vlasov, Sergei N.; Pachulia, Budu P.; and Fishman, Iosif D. Y., 4,315,701, Cl. 405-150.000.
Vock, Manfred H.: *See*—
Trenkle, Robert W.; Mookherjee, Braja D.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,315,953, Cl. 426-538.000.
Wiegers, Wilhelmus J.; Sprecker, Mark A.; Watkins, Hugh; Vock, Manfred H.; and Schmitt, Frederick L., 4,315,951, Cl. 426-536.000.
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Pape, Erwin, 4,315,871, Cl. 261-65.000.
Vollers, Gary L. Shot gun shell primer. 4,315,462, Cl. 102-204.000.
Volluet, Gerard; and Cohen, Daniel, to Thomson-CSF. Magnetostatic wave device containing attenuation means and the way of making it. 4,316,162, Cl. 333-201.000.
Von Roll AG: *See*—
Seglias, Werner, 4,315,712, Cl. 414-149.000.
Von Philipsborn, Gerda: *See*—
Frickel, Fritz-Frieder; Franke, Albrecht; Von Philipsborn, Gerda; Mueller, Claus D.; and Lenke, Dieter, 4,315,939, Cl. 424-267.000.
Vorwerk, Frederick E.: *See*—
Cordani, Eugene J.; and Vorwerk, Frederick E., 4,315,465, Cl. 105-4.00R.
Wachi, Yasuyuki: *See*—
Sato, Masaki; Okuda, Hironori; Ito, Motoya; Makino, Yuji; Wachi, Yasuyuki; Takahashi, Noriyoshi; and Watanabe, Masatoshi, 4,316,113, Cl. 310-262.000.
Wadler, Milt: *See*—
Rowbottam, Francis W.; Skinner, Nathan L.; Niswonger, John O.; and Wadler, Milt, 4,315,732, Cl. 431-344.000.
Wagner, Dieter: *See*—
Hoyer, Ernst; Steuernagel, Hans H.; and Wagner, Dieter, 4,315,865, Cl. 260-373.000.
Wagner, Hans R. Locking device for a bracelet or necklace. 4,315,352, Cl. 24-241.0SP.
Waker, Jerome A.: *See*—
Rhoades, Edward J.; Rosenberger, Edwin C.; and Waker, Jerome A., 4,315,600, Cl. 239-74.000.
Waldron, John M.; Nott, Frederick J.; Harrison, Laurence C.; Johnson, Graham D.; and Green, Malcolm D., to Commonwealth of Australia, Department of Productivity, The. Electricity generator. 4,316,112, Cl. 310-258.000.
Walker, Clifford G. Optical strapdown inertia system. 4,315,693, Cl. 356-350.000.
Walker, Derek; Silvestri, Herbert H.; Sapino, Chester; and Johnson, David A., to Bristol-Myers Company. Cephalosporin intermediates. 4,316,016, Cl. 544-16.000.
Walker, Derek; Silvestri, Herbert H.; Sapino, Chester; and Johnson, David A., to Bristol-Myers Company. Cephalosporin intermediates. 4,316,017, Cl. 544-026.000.
Walkley, Arthur H., IV: *See*—
Rupp, Anthony P.; Intrieri, Salvatore, Jr.; and Walkley, Arthur H., IV, 4,315,780, Cl. 134-7.000.
Wallace, Mackenzie G.: *See*—
Maclay, William P.; and Wallace, Mackenzie G., 4,315,937, Cl. 424-261.000.
Walter Graf u. Co. GmbH & Co.: *See*—
Knodel, Erich R., 4,315,454, Cl. 92-170.000.
Walther, Gerhard: *See*—
Schneider, Claus; Weber, Karl-Heinz; Walther, Gerhard; Boke, Karin; and Bechtel, Wolf D., 4,315,938, Cl. 424-267.000.
Walton, James M.: *See*—
Endicott, Donald L., Jr.; Walton, James M.; and Wernli, Robert L., 4,315,651, Cl. 294-83.00R.

Wang, Cheng-Chi; and Vanderwyck, August H. B., to Rockwell International Corporation. Semi-open liquid phase epitaxial growth system. 4,315,477, Cl. 118-64.000.

Ward, Raymond L. Solar hot water unit and system. 4,315,501, Cl. 126-449.000.

Warner-Lambert Company: *See*—
Doub, Leonard; Haskell, Theodore H.; Mich, Thomas F.; and Schweiss, Dietrich, 4,315,858, Cl. 260-239.100.
Mich, Thomas F.; Haskell, Theodore H.; and Hutt, Marland P., Jr., 4,315,933, Cl. 424-251.000.

Wasa, Kiyotaka: *See*—
Ohji, Kenzo; Yamazaki, Osamu; Wasa, Kiyotaka; and Hayakawa, Shigeru, 4,315,960, Cl. 427-248.100.

Washizuka, Isamu; and Tateishi, Iwao, to Sharp Kabushiki Kaisha. Electronic digital tape measure having flexible measuring tape. 4,316,081, Cl. 235-92.0DN.

Watanabe, Hideo: *See*—
Taoka, Fumio; Tanno, Norimichi; and Watanabe, Hideo, 4,315,724, Cl. 425-130.000.

Watanabe, Kazuo: *See*—
Makabe, Hachiro; Watanabe, Kazuo; Takenoya, Hideaki; Shomura, Eiichi; and Tonomura, Yoshinobu, 4,315,472, Cl. 112-158.00E.

Watanabe, Masatoshi: *See*—
Sato, Masaki; Okuda, Hironori; Ito, Motoya; Makino, Yuji; Wachi, Yasuyuki; Takahashi, Noriyoshi; and Watanabe, Masatoshi, 4,316,113, Cl. 310-262.000.

Watkins, Hugh: *See*—
Wiegers, Wilhelmus J.; Sprecker, Mark A.; Watkins, Hugh; Vock, Manfred H.; and Schmitt, Frederick L., 4,315,951, Cl. 426-536.000.

Watrous, Donald L.; and Weischedel, Richard C., to General Electric Company. Battery monitor circuit. 4,316,185, Cl. 340-636.000.

Watson, Kenneth, to Telegan Limited. Burner control system. 4,315,730, Cl. 431-76.000.

Webber, William T.; and Stabinsky, Leon, to Rockwell International Corporation. Prevaporizing diesel injector. 4,315,490, Cl. 123-275.000.

Weber, Karl-Heinz: *See*—
Schneider, Claus; Weber, Karl-Heinz; Walther, Gerhard; Boke, Karin; and Bechtel, Wolf D., 4,315,938, Cl. 424-267.000.

Weinstein, Marvin J.: *See*—
Leibowitz, Paul; and Weinstein, Marvin J., 4,315,852, Cl. 260-112.00R.

Weisburg, David: *See*—
Booty, Donald A.; and Weisburg, David, 4,316,238, Cl. 362-147.000.

Weischedel, Richard C.: *See*—
Watrous, Donald L.; and Weischedel, Richard C., 4,316,185, Cl. 340-636.000.

Weiss, Franz-Josef: *See*—
Kummer, Rudolf; Weiss, Franz-Josef; Schneider, Heinz-Walter; and Taglieber, Volker, 4,316,047, Cl. 560-206.000.

Welker, Robert H. Dump valve. 4,315,616, Cl. 251-210.000.

Wenger Corporation: *See*—
Boeddeker, David R.; and Tenner, Wayne V., 4,315,633, Cl. 280-79.300.

Wernli, Robert L.: *See*—
Endicott, Donald L., Jr.; Walton, James M.; and Wernli, Robert L., 4,315,651, Cl. 294-83.00R.

Wertz, Jean-Luc H. M. F. G.: *See*—
Brandts Buys, Ludwig D. G.; Godard, Pierre M. J. L.; Goossens, Henri C.; Mignard, Joseph J.; Wertz, Jean-Luc H. M. F. G.; and Mercier, Jean-Pierre, 4,315,959, Cl. 427-214.000.

West Company, The: *See*—
Leiter, L. David; and Ravn, Jacob, 4,315,427, Cl. 73-52.000.

Western Electric Company, Inc.: *See*—
Sawyer, Ernest W., 4,315,518, Cl. 137-3.000.

Westerwalder Eisenwerk Gerhard GmbH: *See*—
Gerhard, Helmut, 4,315,531, Cl. 141-98.000.

Westinghouse Canada Limited: *See*—
van't Hullenaar, Adrian, deceased, 4,316,269, Cl. 367-90.000.
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Westinghouse Electric Corp.: *See*—
Locke, Philip F., Jr., 4,316,133, Cl. 320-48.000.
Moore, Robert A.; and Sundelin, Robert N., 4,316,161, Cl. 333-141.000.
Nathanson, Harvey C., 4,316,103, Cl. 307-304.000.
Pitkjaan, Elam; and Endler, James F., 4,316,240, Cl. 362-267.000.
Sturges, Robert H., Jr., 4,316,189, Cl. 340-870.340.

Weyer, Rudi: *See*—
Hitzel, Volker; Weyer, Rudi; Geisen, Karl; and Regitz, Gunter, 4,315,940, Cl. 424-267.000.

Wharton, James H., to RCA Corporation. Video signal processing apparatus. 4,316,210, Cl. 358-4.000.

Wharton, James H.; and James, Jack E., to RCA Corporation. Video processor employing variable amplitude compression of the chrominance component. 4,316,213, Cl. 358-11.000.

Whirlpool Corporation: *See*—
Baker, Daniel A., 4,315,413, Cl. 62-180.000.
Yoshinari, David A., 4,315,452, Cl. 84-1.260.

Whitehead, Howard A.; and Matray, Attila, to Kimberly-Clark Corporation. Sanitary napkin with heat fusible baffle. 4,315,507, Cl. 128-287.000.

Whiteman, Robert N., Jr., to AMP Incorporated. Slide switch. 4,316,067, Cl. 200-291.000.

Whiteside, George D.: *See*—
Johnson, Bruce K.; and Whiteside, George D., 4,315,677, Cl. 354-49.000.
LaRocque, Arthur G.; Whiteside, George D.; and Johnson, Bruce K., 4,315,676, Cl. 354-27.000.

Whitman, Charles I.: *See*—
Nadkarni, Anil V.; Haws, Warren J.; and Whitman, Charles I., 4,315,777, Cl. 75-232.000.

Wiedemann, Wolfgang, to Hoechst Aktiengesellschaft. Organic double layer electrophotographic recording material. 4,315,981, Cl. 430-59.000.

Wiegers, Wilhelmus J.; Sprecker, Mark A.; Watkins, Hugh; Vock, Manfred H.; and Schmitt, Frederick L., to International Flavors & Fragrances Inc. Flavoring with indane alkanols and tricyclic isochromans. 4,315,951, Cl. 426-536.000.

Wigby, Jon, to Elco Corporation. Terminal post inserting component. 4,315,365, Cl. 29-739.000.

Wikel, James H.: *See*—
Eli Lilly and Company; Paget, Charles J.; and Wikel, James H., 4,316,021, Cl. 544-139.000.

Wildgruber, Josef: *See*—
Hereth, Alfred; Rieger, Klaus; and Wildgruber, Josef, 4,315,957, Cl. 427-155.000.

Wilkens, Christian: *See*—
Kernbichler, Bert; and Wilkens, Christian, 4,315,419, Cl. 66-87.000.

Wilkinson, Clive K.: *See*—
Inkson, Michael B.; and Wilkinson, Clive K., 4,316,012, Cl. 536-114.000.

Willard, John W., Sr. Method of treating cannibalism in poultry. 4,315,917, Cl. 424-155.000.

Willem, Michel, to Societe Anonyme dite: CERAVER. Connection between core and casing of a structure having an agglomerated fibre core. 4,316,054, Cl. 174-140.00S.

Williams, Joseph: *See*—
Primont, James; Williams, Joseph; and Zazzera, Paul, Jr., 4,316,181, Cl. 340-571.000.

Williams, Thomas C.: *See*—
Totten, George E.; and Williams, Thomas C., 4,316,041, Cl. 556-420.000.

Williamson, Glen E. Scale. 4,315,554, Cl. 177-256.000.

Willis, Carl L.; and Slaugh, Lynn H., to Shell Oil Company. Method for removing catalyst residues from atactic polypropylene. 4,316,008, Cl. 528-487.000.

Wills, John R.: *See*—
De Santis, Charles M.; and Wills, John R., 4,316,194, Cl. 343-700.0MS.

Wilson, David T.; Tancrell, Roger H.; and Callerame, Joseph, to Raytheon Company. Polymeric piezoelectric microprobe with damper. 4,316,115, Cl. 310-327.000.

Wilson, Roy J., to John Zink Company. Plenum type variable air volume mounting curb. 4,315,415, Cl. 62-263.000.

Wilson, Walter A., to National Steel Corporation. Method of controlling the concentration and stability of an emulsion. 4,315,421, Cl. 72-42.000.

Wilzig, Herbert; and Schuessler, Charles J. Bolt mechanism and method of making same. 4,315,647, Cl. 292-143.000.

Winsor, Jack O., to Dresser Industries, Inc. Raise drill apparatus. 4,315,552, Cl. 173-159.000.

Winter, George R., III, to UOP Inc. Apparatus for the solvent extraction of aromatic hydrocarbons from a hydrocarbon mixture. 4,315,801, Cl. 196-14.520.

Winter, Roland A. E.: *See*—
Dexter, Martin; and Winter, Roland A. E., 4,315,848, Cl. 260-45.8NT.

Witt, Enrique R.; Humphrey, William J.; and Cave, James P., to Celanese Corporation. Anaerobic treatment. 4,315,823, Cl. 210-605.000.

Wolf, Anthony D., to Du Pont de Nemours, E. I., and Company. Triazolone herbicides. 4,315,767, Cl. 71-91.000.

Wolff, Friedrich. Sunlamp and source of ultraviolet radiation therefor. 4,316,094, Cl. 250-504.00R.

Woodall, Jerry M., to International Business Machines Corporation. Energy conversion. 4,316,048, Cl. 136-253.000.

Woodmansee, Donald E., to General Electric Company. Coal gasification apparatus. 4,315,757, Cl. 48-71.000.

Woodward, James C.; and Holland, Marion D., to Robbins, Robert E. Vacuum cleaner with improved compressed air means. 4,315,344, Cl. 15-345.000.

Wright, David M.: *See*—
Ermanski, Albert G.; and Wright, David M., 4,315,696, Cl. 402-70.000.

Wright Line Inc.: *See*—
Ermanski, Albert G.; and Wright, David M., 4,315,696, Cl. 402-70.000.

Wright, Steven W.: *See*—
Kennedy, Alvin B., Jr.; and Wright, Steven W., 4,315,335, Cl. 2-424.000.

Wrightman Enterprises, Inc.: *See*—
Buckman, Charles E., 4,315,624, Cl. 273-32.00A.

Wroblewski, Theodore. Temperature control devices. 4,316,080, Cl. 219-505.000.

Wuerzer, Bruno: *See*—
Hamprecht, Gerhard; and Wuerzer, Bruno, 4,315,766, Cl. 71-88.000.
Hamprecht, Gerhard; Acker, Rolf-Dieter; and Wuerzer, Bruno, 4,316,014, Cl. 544-7.000.

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Plath, Peter; Wuerzer, Bruno; and Rohr, Wolfgang, 4,316,039, Cl. 548-362.000.
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Wuestner, Friedrich, to Siemens Aktiengesellschaft. Method and a device for separating a plurality of light waveguides carried in a cable. 4,315,584, Cl. 225-2.000.
Wurster, Rudolf F.; and Merz, Jurg, to Ciba-Geigy Corporation. Cationic adsorption agent. 4,316,005, Cl. 528-256.000.
Wyatt, James W., Sr.; and McEntire, James D. Method and apparatus for modifying the ignition system of multi-cylinder engines. 4,315,487, Cl. 123-146.50A.
Wymore, Max L.: *See*—
Church, Peter K., 4,315,828, Cl. 252-153.000.
Wyns-Bristol S.A. Peintures: *See*—
Brandts Buys, Ludwig D. G.; Godard, Pierre M. J. L.; Goossens, Henri C.; Mignard, Joseph J.; Wertz, Jean-Luc H. M. F. G.; and Mercier, Jean-Pierre, 4,315,959, Cl. 427-214.000.
Xerox Corporation: *See*—
Rourke, John L.; and Keukelaar, Ronald E., 4,315,837, Cl. 252-430.000.
Scifres, Donald R.; Streifer, William; and Burnham, Robert D., 4,316,156, Cl. 372-50.000.
Soong, Tsai C., 4,315,589, Cl. 227-155.000.
Yamada Iryo Shomei Kabushiki Kaisha: *See*—
Yamada, Isao; Ikeda, Mitsuyuki; and Komori, Yumiko, 4,316,237, Cl. 362-33.000.
Yamada, Isao; Ikeda, Mitsuyuki; and Komori, Yumiko, to Yamada Iryo Shomei Kabushiki Kaisha. Lighting fixture for use in medical operations and therapeutic treatment. 4,316,237, Cl. 362-33.000.
Yamada, Teruaki: *See*—
Akisue, Osamu; Yamada, Teruaki; Matsuo, Munetsugu; and Uehara, Norimasa, 4,315,783, Cl. 148-12.00C.
Yamada, Tokuyoshi: *See*—
Ueda, Setsuo; Yasuda, Takashi; Yamada, Tokuyoshi; and Kobayashi, Shigeki, 4,315,720, Cl. 425-8.000.
Yamada, Tomio: *See*—
Ishimitsu, Keiichi; Kasahara, Isamu; Yamada, Tomio; Matsuda, Michihiko; Takahashi, Hidemitsu; and Soma, Shuichi, 4,316,044, Cl. 560-105.000.
Yamaguchi, Hiroyasu, to Tokyo Shibaura Denki Kabushiki Kaisha. Power amplifier. 4,316,149, Cl. 330-268.000.
Yamamoto Kagaku Gosei Co., Ltd.: *See*—
Hatano, Yoshihiro; Ikegami, Seishi; Itoh, Kenji; and Matsumoto, Mansuke, 4,316,026, Cl. 546-5.000.
Yamamoto, Kohichi: *See*—
Sadamatsu, Shigeru; Yamamoto, Kohichi; and Ohmi, Kazuaki, 4,315,980, Cl. 430-58.000.
Yamamoto, Shigemi: *See*—
Onishi, Masayoshi; Haruta, Yoshikatu; Sakurai, Toshiyuki; and Yamamoto, Shigemi, 4,315,493, Cl. 123-617.000.
Yamanaka, Kunio: *See*—
Hideshima, Keiji; Koyanagi, Haruo; Suda, Hiroharu; Sawano, Hirokazu; Takaki, Masaoki; Yamanaka, Kunio; Yasuda, Isao; and Asada, Kazuyoshi, 4,316,260, Cl. 364-900.000.
Yamazaki, Haruo; Ogata, Yoshiro; and Akutsu, Hidezoh, to Matsushita Electronics Corporation. High pressure sodium vapor discharge lamp. 4,316,122, Cl. 315-74.000.
Yamazaki, Osamu: *See*—
Ohji, Kenzo; Yamazaki, Osamu; Wasa, Kiyotaka; and Hayakawa, Shigeru, 4,315,960, Cl. 427-248.100.
Yanaka, Takashi; and Shirota, Kohei, to International Precision Incorporated. Method of photographing electron microscope images on a single photographic plate and apparatus therefor. 4,316,087, Cl. 250-307.000.
Yasuda, Isao: *See*—
Hideshima, Keiji; Koyanagi, Haruo; Suda, Hiroharu; Sawano, Hirokazu; Takaki, Masaoki; Yamanaka, Kunio; Yasuda, Isao; and Asada, Kazuyoshi, 4,316,260, Cl. 364-900.000.
Yasuda, Takashi: *See*—
Ueda, Setsuo; Yasuda, Takashi; Yamada, Tokuyoshi; and Kobayashi, Shigeki, 4,315,720, Cl. 425-8.000.
Yasumoto, Yoshio; Tomimoto, Tetsuo; and Taira, Eiichi, to Matsushita Electric Industrial Co., Ltd. System for improving reproduction of images in a color television receiver. 4,316,215, Cl. 358-37.000.
Yeda Research and Development Co., Ltd.: *See*—
Manassen, Joost; Hodes, Gary; and Cahen, David, 4,315,973, Cl. 429-111.000.
Yokoshima, Naohiko: *See*—
Isoya, Toshisuke; Mishiro, Masayuki; and Yokoshima, Naohiko, 4,316,075, Cl. 219-124.220.
Yokoyama, Fumitomo: *See*—
Miki, Nobuaki; Sakakibara, Shiro; and Yokoyama, Fumitomo, 4,315,519, Cl. 137-56.000.
Yokozawa, Norio: *See*—
Shibayama, Akinori; Maio, Kenji; Hotta, Masao; and Yokozawa, Norio, 4,316,178, Cl. 340-347.0DA.
Yoshida, Kanji, to Tomy Corporation. Mechanical hand amusement device. 4,315,650, Cl. 294-19.00R.
Yoshida, Ryo: *See*—
Kosuge, Yoshiaki; Yoshida, Ryo; Sumida, Seizo; Oshita, Hirofumi; Otsuki, Soji; and Kamoshita, Katsuzo, 4,315,768, Cl. 71-98.000.
Yoshida, Toshio: *See*—
Ueno, Kimitoshi; and Yoshida, Toshio, 4,315,778, Cl. 106-19.000.
Yoshihara, Ichiro: *See*—
Mizuta, Toshiaki; Abe, Takeshi; Yoshihara, Ichiro; Saito, Kazuhito; and Tsuchiya, Keishin, 4,316,262, Cl. 364-900.000.
Yoshikumi, Chikao; Fujii, Takayoshi; Fujii, Masahiko; Matsunaga, Kenichi; Oguchi, Yoshiharu; and Niimura, Koichi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Pharmaceutical composition having antitumor activity. 4,315,851, Cl. 260-112.00B.
Yoshikumi, Chikao; Ohmura, Yoshio; Hirose, Fumio; Ikuzawa, Masanori; Matsunaga, Kenichi; Fujii, Takayoshi; Ohhara, Minoru; and Ando, Takao, to Kureha Kagaku Kogyo Kabushiki Kaisha. Pharmaceutical composition containing fara-amino-benzoic acid-N-D-xyloside as an active ingredient. 4,315,921, Cl. 424-180.000.
Yoshimoto, Akihiro: *See*—
Oki, Toshikazu; Yoshimoto, Akihiro; Matsuzawa, Yasue; Inui, Taiji; Takeuchi, Tomio; and Umezawa, Hamao, 4,316,011, Cl. 536-17.00A.
Yoshimoto, Yuichiro; and Kodama, Hiroshi, to Hitachi, Ltd. Nuclear reactor. 4,315,800, Cl. 376-246.000.
Yoshimura, Masato: *See*—
Tadokoro, Tomoo; Okimoto, Haruo; Honda, Yasuo; Nomura, Hiroshi; and Yoshimura, Masato, 4,315,489, Cl. 123-213.000.
Yoshimura, Yoshinobu; Morikawa, Nobuhide; and Takanohashi, Kunio, to Takeda Chemical Industries, Ltd. Crystallized cephalosporin salts. 4,316,018, Cl. 544-27.000.
Yoshinari, David A., to Whirlpool Corporation. Electronic organ percussive modulator. 4,315,452, Cl. 84-1.260.
Yoshino Kogyosho Co., Ltd.: *See*—
Yoshino, Yataro, 4,315,725, Cl. 425-174.400.
Yoshino, Yataro, to Yoshino Kogyosho Co., Ltd. Jig for orientation-blow molding piece. 4,315,725, Cl. 425-174.400.
Yost, Thomas D., to RCA Corporation. Keying signal generator with input control for false output immunity. 4,316,214, Cl. 358-21.00R.
Young, Ian A.; Hildebrand, David B.; and Johnson, Charles B., to Mostek Corporation. Dynamic ratioless circuitry for random logic applications. 4,316,106, Cl. 307-481.000.
Young, Kenneth: *See*—
Jodrey, Robert M.; and Young, Kenneth, 4,315,795, Cl. 156-542.000.
Zagorodnaya, Galina A.; Khutoretsky, Garri M.; and Vartanian, Gurgen P. Locking structure for rotor end winding of a distributed polar electric machine. 4,316,114, Cl. 310-270.000.
Zahner, Hans: *See*—
Hagenmaier, Hans-Paul; Konig, Wilfried; Zahner, Hans; Fiedler, Hans-Peter; Dehler, Wolfgang; Keckeisen, Adelinde; Holst, Hartwig; and Zoebelein, Gerhard, 4,315,922, Cl. 424-181.000.
Zaidan Hojin Handotai Kenkyu Shinkokai: *See*—
Nishizawa, Jun-ichi, 4,315,796, Cl. 156-614.000.
Zappel, Joseph. Continuous chain formed from a multiplicity of loops formed from dental floss material and apparatus for producing the same. 4,315,516, Cl. 132-90.000.
Zarudiansky, Alain, to Schlumberger Technology Corporation. Borehole logging tool cryostat. 4,315,417, Cl. 62-514.00R.
Zazzera, Paul, Jr.: *See*—
Primont, James; Williams, Joseph; and Zazzera, Paul, Jr., 4,316,181, Cl. 340-571.000.
Zbornik, Vaclav; and Gygli, Walter, to Haemmerle AG. Clamping device for fastening a tool to a tool holder. 4,315,425, Cl. 72-481.000.
Zeidler, Georg; Dehnert, Johannes; Hansen, Guenter; and Riedel, Guenther, to BASF Aktiengesellschaft. Oil-soluble azo dye with N-substituted β-naphthylamine as coupling component. 4,315,756, Cl. 44-59.000.
Zellweger Uster, Ltd.: *See*—
Felix, Ernst, 4,315,607, Cl. 242-36.000.
Zengel, Hans-Georg: *See*—
Bergfeld, Manfred; Zengel, Hans-Georg; and Praetorius, Heinz, 4,316,031, Cl. 546-175.000.
Zer, Avraham: *See*—
Zer, Tamar; and Zer, Avraham, 4,315,908, Cl. 424-1.000.
Zer, Tamar; and Zer, Avraham. Method of determining human chorionic gonadotropin (HCG) in the urine. 4,315,908, Cl. 424-1.000.
Zoebelein, Gerhard: *See*—
Hagenmaier, Hans-Paul; Konig, Wilfried; Zahner, Hans; Fiedler, Hans-Peter; Dehler, Wolfgang; Keckeisen, Adelinde; Holst, Hartwig; and Zoebelein, Gerhard, 4,315,922, Cl. 424-181.000.
Zoll, August H.: *See*—
Cole, Rossa W.; and Zoll, August H., 4,315,400, Cl. 60-39.020.
Zupfer, Jerrald A.: *See*—
Koehler, Dale R.; and Zupfer, Jerrald A., 4,316,276, Cl. 368-70.000.
Zurcher, Erwin: *See*—
Pfeifer, Hermann; and Zurcher, Erwin, 4,315,399, Cl. 57-302.000.
Zurn Industries, Inc.: *See*—
Mann, Alexander B.; Kraeling, John B., Jr.; and Bukowski, Ronald G., 4,315,820, Cl. 210-408.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 16TH DAY OF FEBRUARY, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Barradas, George, to Sunbeam Corporation (Canada) Limited. Hair curling implement. Re. 30,866, Cl. 132-37.00R.

Gaffney, Edward J., to Orthokinetics, Incorporated. Travel chair. Re. 30,867, Cl. 280-642.000.

Marritt, Clifford R.; and Williams, Robert E., to Molins Limited. Manufacture of filter-tipped cigarettes. Re. 30,865, Cl. 131-60.000.

Molins Limited: *See*—
Marritt, Clifford R.; and Williams, Robert E., Re. 30,865, Cl. 131-60.000.

Mori, Yasuharu, to Rengo Co., Ltd. Paper roll diameter sensing device for use with paper splicing apparatus. Re. 30,868, Cl. 340-675.000.

Orthokinetics, Incorporated: *See*—
Gaffney, Edward J., Re. 30,867, Cl. 280-642.000.

Rengo Co., Ltd.: *See*—
Mori, Yasuharu, Re. 30,868, Cl. 340-675.000.

Sunbeam Corporation (Canada) Limited: *See*—
Barradas, George, Re. 30,866, Cl. 132-37.00R.

Williams, Robert E.: *See*—
Marritt, Clifford R.; and Williams, Robert E., Re. 30,865, Cl. 131-60.000.

LIST OF DESIGN PATENTEES

Aavid Engineering, Inc.: *See*—
McCarthy, Alfred F., 263,042, Cl. D13-23.000.

Adidas Fabrique de Chaussures de Sport: *See*—
Joseph, Michel, 263,005, Cl. D2-36.000.

Allen, Jack. Tooth pick dispenser. 263,014, 2-16-82, Cl. D7-75.000.

Allen, Jan K.; and Hess, Phillip W., to Caterpillar Tractor Co. Pipelayer. 263,051, 2-16-82, Cl. D15-24.000.

American Optical Corporation: *See*—
Johnsen, David W., 263,058, Cl. D16-117.000.

Amos, Burl O. Plumb bob supporting vertical alignment gauge or the like. 263,032, 2-16-82, Cl. D10-70.000.

Andis Clipper Company: *See*—
Andis, Matthew L., 263,085, Cl. D28-35.000.

Andis, Matthew L., to Andis Clipper Company. Hair curling brush. 263,085, 2-16-82, Cl. D28-35.000.

Angeles, Connie C. Foldable clothes hanger. 263,013, 2-16-82, Cl. D6-250.000.

Assmann G.m.b.H.: *See*—
Schulze-Bahr, Werner, 263,044, Cl. D14-3.000.

Atkinson, Michael L.; and Miller, Edward C., to Ball Corporation. Can or similar article. 263,024, 2-16-82, Cl. D9-351.000.

Ball Corporation: *See*—
Atkinson, Michael L.; and Miller, Edward C., 263,024, Cl. D9-351.000.

Beatrice Foods Co.: *See*—
Chow, Ho; and Uyeda, Tim M., 263,069, Cl. D23-38.000.

Beechuk, Timothy J.; and Pardo, John, to Procter & Gamble Company, The. Bottle. 263,026, 2-16-82, Cl. D9-404.000.

Bell Telephone Laboratories, Incorporated: *See*—
Genaro, Donald M.; and McGarvey, John N., 263,046, Cl. D14-53.000.
Genaro, Donald M.; and McGarvey, John N., 263,048, Cl. D14-63.000.

Bennett, Reginald B. P., to Northern Telecom Limited. Portable welding tool. 263,054, 2-16-82, Cl. D15-144.000.

Berger, Elliott H.: *See*—
Lilley, Daniel T., Jr.; Berger, Elliott H.; and Passanisi, John A., 263,022, Cl. D8-402.000.

Best, Ralph E.; Creedon, Richard L.; Mason, Michael E.; Panter, Harrison R.; Schreiber, Richard A.; and Rollins, Jack D., to Nuclear Assurance Corp. Spent nuclear fuel shipping cask. 263,086, 2-16-82, Cl. D29-6.000.

Best, Ralph E.; Bhandari, Vijay; Mason, Michael E.; Panter, Harrison R.; and Schreiber, Richard A., to Nuclear Assurance Corp. Basket for a spent nuclear fuel shipping cask. 263,087, 2-16-82, Cl. D29-6.000.

Bhandari, Vijay: *See*—
Best, Ralph E.; Bhandari, Vijay; Mason, Michael E.; Panter, Harrison R.; and Schreiber, Richard A., 263,087, Cl. D29-6.000.

Bianchi Leather Products, Inc.: *See*—
Nichols, Richard D. E., 263,067, Cl. D22-14.000.

Boker, Irving. Photographer's accessory vest. 263,006, 2-16-82, Cl. D2-190.000.

Brown, Arnold C. Chariot. 263,037, 2-16-82, Cl. D12-105.000.

Bunger, Richard E. Animal confinement barn. 263,080, 2-16-82, Cl. D25-22.000.

Burlington Norther, Inc.: *See*—
Siegfried, Frederick R., 263,021, Cl. D8-373.000.

Calhoun, George M. Holter recorder testing device. 263,033, 2-16-82, Cl. D10-78.000.

Carder, Terry L.: *See*—
Schoeneck, Robert L.; Smith, William C.; Hoyle, Wallis I.; Swayze, Clark E.; Carder, Terry L.; and Theriault, Albert N., 263,025, Cl. D9-404.000.

Carpay, Johan J.: *See*—
Jonkers, Martinus K. P.; and Carpay, Johan J., 263,073, Cl. D24-10.000.

Carre, Alain, to Waterman S.A. Watch. 263,031, 2-16-82, Cl. D10-39.000.

Caterpillar Tractor Co.: *See*—
Allen, Jan K.; and Hess, Phillip W., 263,051, Cl. D15-24.000.

Chang, Kyung T., to Han Baek Trading Co., Ltd. Motor oil drain pump. 263,050, 2-16-82, Cl. D15-7.000.

Chow, Ho; and Uyeda, Tim M., to Beatrice Foods Co. Sprinkler control valve. 263,069, 2-16-82, Cl. D23-38.000.

Clarke, Thomas H., Jr.: *See*—
Franich, Louie J.; and Clarke, Thomas H., Jr., 263,053, Cl. D15-98.000.

Cobb, Richard E., to GTE Automatic Electric Labs Inc. Housing for a telephone handset. 263,049, 2-16-82, Cl. D14-63.000.

Cobb, Richard E.: *See*—
Janda, George M.; and Cobb, Richard E., 263,045, Cl. D14-53.000.

Commisso, Nicholas D., to Mobil Oil Corporation. Packaging for food container or the like. 263,023, 2-16-82, Cl. D9-347.000.

Conti, Rino: *See*—
Croyle, Jack V.; and Conti, Rino, 263,059, Cl. D19-69.000.

Corning Glass Works: *See*—
LeVan, Kenneth R., 263,083, Cl. D26-11.000.

Creedon, Richard L.: *See*—
Best, Ralph E.; Creedon, Richard L.; Mason, Michael E.; Panter, Harrison R.; Schreiber, Richard A.; and Rollins, Jack D., 263,086, Cl. D29-6.000.

Croyle, Jack V.; and Conti, Rino, to Dart Industries Inc. Label dispenser or the like. 263,059, 2-16-82, Cl. D19-69.000.

Dart Industries Inc.: *See*—
Croyle, Jack V.; and Conti, Rino, 263,059, Cl. D19-69.000.

DeKrech Enterprises, Inc.: *See*—
Krech, David E., 263,088, Cl. D99-5.000.

Doan, Duc. Combined ear wax remover and tooth pick. 263,075, 2-16-82, Cl. D24-23.000.

Douglas, Thomas E., to Zarn, Inc. Trash can cover. 263,017, 2-16-82, Cl. D34-11.000.

Dowse, Bruce, to Dowse Designs Pty. Limited. Chair. 263,008, 2-16-82, Cl. D6-73.000.

Dowse Designs Pty. Limited: *See*—
Dowse, Bruce, 263,008, Cl. D6-73.000.

Dunlop Limited: *See*—
Ingley, Peter, 263,041, Cl. D12-148.000.

E-A-R Corporation: *See*—
Lilley, Daniel T., Jr.; Berger, Elliott H.; and Passanisi, John A., 263,022, Cl. D8-402.000.

Eddleman, Roy T.; and Moran, Gregory F., to Spectrum Medical Industries, Inc. In-line filter for laboratory use. 263,078, 2-16-82, Cl. D24-52.000.

Ernst Leitz Wetzlar GmbH: *See*—
Janke, Heinrich; and Uellenberg, Hans-Kurt, 263,057, Cl. D16-131.000.

Fitzgerald, James P.: *See*—
Fitzgerald, Joseph M.; and Fitzgerald, James P., 263,040, Cl. D12-181.000.

Fitzgerald, Joseph M.; and Fitzgerald, James P., to Nose Cone Manufacturing Co., Inc. Set of air deflector for a vehicle. 263,040, 2-16-82, Cl. D12-181.000.

Franich, Louie J.; and Clarke, Thomas H., Jr. Garbage compactor. 263,053, 2-16-82, Cl. D15-98.000.

Frechette, James F., Jr. Snow coaster. 263,035, 2-16-82, Cl. D12-8.000.

Fred Roberts Co.: *See*—
Lease, Harold F., 263,061, Cl. D10-46.100.

Genaro, Donald M.; and McGarvey, John N., to Bell Telephone Laboratories, Incorporated. Telephone set. 263,046, 2-16-82, Cl. D14-53.000.

Genaro, Donald M.; and McGarvey, John N., to Bell Telephone Laboratories, Incorporated. Telephone handset. 263,048, 2-16-82, Cl. D14-63.000.

George, Peter D. Wall clock. 263,030, 2-16-82, Cl. D10-24.000.

Gilford, Ira B., to Reiner, Lawrence L. Combined toy bear and cage charm. 263,028, 2-16-82, Cl. D11-2.000.

GTE Automatic Electric Labs Inc.: *See*—
Cobb, Richard E., 263,049, Cl. D14-63.000.
Janda, George M.; and Cobb, Richard E., 263,045, Cl. D14-53.000.

Han Baek Trading Co., Ltd.: *See*—
Chang, Kyung T., 263,050, Cl. D15-7.000.

Hanaford, Donald E., to Thomson, Arthur E. Furniture base. 263,012, 2-16-82, Cl. D6-194.000.

Hass, Peter O. S. Paving stone unit. 263,082, 2-16-82, Cl. D25-92.000.

Hattori, Yasuo, to Olympus Optical Company Ltd. Camera. 263,056, 2-16-82, Cl. D16-5.000.

Hess, Phillip W.: *See*—
Allen, Jan K.; and Hess, Phillip W., 263,051, Cl. D15-24.000.

Hickman, Ronald P.: *See*—
Styman, Alan F.; and Hickman, Ronald P., 263,007, Cl. D6-26.000.

Hoyle, Wallis I.: *See*—
Schoeneck, Robert L.; Smith, William C.; Hoyle, Wallis I.; Swayze, Clark E.; Carder, Terry L.; and Theriault, Albert N., 263,025, Cl. D9-404.000.

Hughes Supply Company of Thomasville, Incorporated, The: *See*—
Marsh, Thomas R., 263,010, Cl. D6-191.000.

Hung, Mao-Hsiung. Jack. 263,036, 2-16-82, Cl. D34-31.000.

Hunter, Michael J.: *See*—
Hunter, Mike E.; and Hunter, Michael J., 263,081, Cl. D25-25.000.

Hunter, Mike E.; and Hunter, Michael J., to Nuclear Assurance Corp. Relocatable building structure for racquetball court. 263,081, 2-16-82, Cl. D25-25.000.

Ingley, Peter, to Dunlop Limited. Tire for a vehicle wheel. 263,041, 2-16-82, Cl. D12-148.000.

Janda, George M.; and Cobb, Richard E., to GTE Automatic Electric Labs Inc. Combined telephone set and base therefore. 263,045, 2-16-82, Cl. D14-53.000.

Janke, Heinrich; and Uellenberg, Hans-Kurt, to Ernst Leitz Wetzlar GmbH. Microscope. 263,057, 2-16-82, Cl. D16-131.000.

Johnsen, David W., to American Optical Corporation. Pair of spectacles. 263,058, 2-16-82, Cl. D16-117.000.

Jonkers, Martinus K. P.; and Carpay, Johan J. Device for treating dentures with anti-caries preparation. 263,073, 2-16-82, Cl. D24-10.000.

Joseph, Michel, to Adidas Fabrique de Chaussures de Sport. Gymnast's suit. 263,005, 2-16-82, Cl. D2-36.000.

Keller, Robert L. Wastebasket or the like. 263,016, 2-16-82, Cl. D34-1.000.

Knebel, Robert W. Vacuum operated insect collector. 263,068, 2-16-82, Cl. D22-19.000.

Kobayashi, Heiji. Motorcycle. 263,038, 2-16-82, Cl. D12-110.000.

Krech, David E., to DeKrech Enterprises, Inc. Cremation urn. 263,088, 2-16-82, Cl. D99-5.000.

Lease, Harold F., to Fred Roberts Co. Cribbage game board. 263,061, 2-16-82, Cl. D10-46.100.

Lee, David L.; and O'Connor, Harry J. Panel for a chair back. 263,011, 2-16-82, Cl. D6-193.000.

Leeds, Doris J.: *See*—
Petrie, Ross J., 263,043, Cl. D14-36.000.

LeVan, Kenneth R., to Corning Glass Works. Candlestick type holder for floating candles. 263,083, 2-16-82, Cl. D26-11.000.

Lilley, Daniel T., Jr.; Berger, Elliott H.; and Passanisi, John A., to E-A-R Corporation. Vibration isolator or similar article. 263,022, 2-16-82, Cl. D8-402.000.

Little, Paul V. Jewelry clip or the like. 263,034, 2-16-82, Cl. D11-87.000.

Loncasty, Peter T. Lunch box. 263,015, 2-16-82, Cl. D7-76.000.

Loving, Jimmie D. Combined oil temperature and oil level gauge for motorcycles. 263,027, 2-16-82, Cl. D10-57.000.

MacFaden, Donald R., to Stardate, Inc. Pendant. 263,029, 2-16-82, Cl. D11-79.000.

Marsh, Thomas R., to Hughes Supply Company of Thomasville, Incorporated, The. Drawer back bearing. 263,010, 2-16-82, Cl. D6-191.000.

Mason, Edwin W., to Mason-Keller Corporation. Culture swab transport package with rupturable sealed section having a stored culture medium. 263,074, 2-16-82, Cl. D24-17.000.

Mason-Keller Corporation: *See*—
Mason, Edwin W., 263,074, Cl. D24-17.000.

Mason, Michael E.: *See*—
Best, Ralph E.; Creedon, Richard L.; Mason, Michael E.; Panter, Harrison R.; Schreiber, Richard A.; and Rollins, Jack D., 263,086, Cl. D29-6.000.
Best, Ralph E.; Bhandari, Vijay; Mason, Michael E.; Panter, Harrison R.; and Schreiber, Richard A., 263,087, Cl. D29-6.000.

Matsui, Hidetoshi. Kinetic sculpture. 263,063, 2-16-82, Cl. D21-102.000.

Matsui, Hidetoshi. Kinetic sculpture. 263,064, 2-16-82, Cl. D21-102.000.

Matsui, Hidetoshi. Kinetic sculpture. 263,065, 2-16-82, Cl. D21-102.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Ueda, Yoshiaki, 263,052, Cl. D32-33.000.

McCarthy, Alfred F., to Aavid Engineering, Inc. Winged-collar heat sink for electronic devices. 263,042, 2-16-82, Cl. D13-23.000.

McGarvey, John N.: *See*—
Genaro, Donald M.; and McGarvey, John N., 263,046, Cl. D14-53.000.
Genaro, Donald M.; and McGarvey, John N., 263,048, Cl. D14-63.000.

Merino, Dennis H.; and Ralph, J. Clyde. Inflatable saddle for an aquatic game. 263,066, 2-16-82, Cl. D21-237.000.

Merritt, Murray L. Pivotable latch to cover hole in stovepipe. 263,071, 2-16-82, Cl. D23-163.000.

Merritt, Murray L. Pivotable latch to cover hole in stovepipe. 263,072, 2-16-82, Cl. D23-163.000.

Metz, Thomas V.; and Sirois, W. James, to Pacific Fireplace Furnishings, Inc. Low profile forced air fireplace furnace. 263,070, 2-16-82, Cl. D23-95.000.

Miller, Edward C.: *See*—
Atkinson, Michael L.; and Miller, Edward C., 263,024, Cl. D9-351.000.

Mobil Oil Corporation: *See*—
Commisso, Nicholas D., 263,023, Cl. D9-347.000.

Moran, Gregory F.: *See*—
Eddleman, Roy T.; and Moran, Gregory F., 263,078, Cl. D24-52.000.

Nichols, Richard D. E., to Bianchi Leather Products, Inc. Firearm clip carrier. 263,067, 2-16-82, Cl. D22-14.000.

Northern Telecom Limited: *See*—
Bennett, Reginald B. P., 263,054, Cl. D15-144.000.
Trussler, Peter D. H., 263,047, Cl. D14-60.000.

Nose Cone Manufacturing Co., Inc.: *See*—
Fitzgerald, Joseph M.; and Fitzgerald, James P., 263,040, Cl. D12-181.000.

Nuclear Assurance Corp.: *See*—
Best, Ralph E.; Creedon, Richard L.; Mason, Michael E.; Panter, Harrison R.; Schreiber, Richard A.; and Rollins, Jack D., 263,086, Cl. D29-6.000.
Best, Ralph E.; Bhandari, Vijay; Mason, Michael E.; Panter, Harrison R.; and Schreiber, Richard A., 263,087, Cl. D29-6.000.
Hunter, Mike E.; and Hunter, Michael J., 263,081, Cl. D25-25.000.

O'Connor, Harry J.: *See*—
Lee, David L.; and O'Connor, Harry J., 263,011, Cl. D6-193.000.

O'Keefe, Charles B. Auxiliary toilet paper roll holder. 263,009, 2-16-82, Cl. D6-97.000.

Olympus Optical Company Ltd.: *See*—
Hattori, Yasuo, 263,056, Cl. D16-5.000.

Pacific Fireplace Furnishings, Inc.: *See*—
Metz, Thomas V.; and Sirois, W. James, 263,070, Cl. D23-95.000.

Panter, Harrison R.: *See*—
Best, Ralph E.; Creedon, Richard L.; Mason, Michael E.; Panter, Harrison R.; Schreiber, Richard A.; and Rollins, Jack D., 263,086, Cl. D29-6.000.
Best, Ralph E.; Bhandari, Vijay; Mason, Michael E.; Panter, Harrison R.; and Schreiber, Richard A., 263,087, Cl. D29-6.000.

Pardo, John: *See*—
Beechuk, Timothy J.; and Pardo, John, 263,026, Cl. D9-404.000.

Passanisi, John A.: *See*—
Lilley, Daniel T., Jr.; Berger, Elliott H.; and Passanisi, John A., 263,022, Cl. D8-402.000.

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Perry, Danny V.: *See*—
Perry, Dan E.; and Perry, Danny V., 263,055, Cl. D15-150.000.

Perry and Perry, Inc.: *See*—
Perry, Dan E.; and Perry, Danny V., 263,055, Cl. D15-150.000.

Petrie, Ross J., to Leeds, Doris J. Headset for one-way private channel radio communications system. 263,043, 2-16-82, Cl. D14-36.000.

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Rau, David M., III. Retractable knife. 263,020, 2-16-82, Cl. D8-99.000.

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Reiner, Lawrence L.: *See*—
Gilford, Ira B., 263,028, Cl. D11-2.000.

Richard, J. Berchman, Jr. Locking bicycle stand. 263,039, 2-16-82, Cl. D12-115.000.

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Best, Ralph E.; Creedon, Richard L.; Mason, Michael E.; Panter, Harrison R.; Schreiber, Richard A.; and Rollins, Jack D., 263,086, Cl. D29-6.000.

Samuelsson, Jonas. Drill harness. 263,019, 2-16-82, Cl. D8-70.000.

Sandel, Dan S. Multiple pouch surgical instrument holder. 263,076, 2-16-82, Cl. D24-29.000.
Scheu, William E. Solder extractor. 263,018, 2-16-82, Cl. D8-30.000.
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Schoeneck, Robert L.; Smith, William C.; Hoyle, Wallis I.; Swayze, Clark E.; Carder, Terry L.; and Theriault, Albert N., 263,025, Cl. D9-404.000.
Schoeneck, Robert L.; Smith, William C.; Hoyle, Wallis I.; Swayze, Clark E.; Carder, Terry L.; and Theriault, Albert N., to Schoeneck Containers, Inc. Bottle. 263,025, 2-16-82, Cl. D9-404.000.
Schreiber, Richard A.: *See*—
Best, Ralph E.; Creedon, Richard L.; Mason, Michael E.; Panter, Harrison R.; Schreiber, Richard A.; and Rollins, Jack D., 263,086, Cl. D29-6.000.
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Sirois, W. James: *See*—
Metz, Thomas V.; and Sirois, W. James, 263,070, Cl. D23-95.000.
Smith, William C.: *See*—
Schoeneck, Robert L.; Smith, William C.; Hoyle, Wallis I.; Swayze, Clark E.; Carder, Terry L.; and Theriault, Albert N., 263,025, Cl. D9-404.000.
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Eddleman, Roy T.; and Moran, Gregory F., 263,078, Cl. D24-52.000.
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Stardate, Inc.: *See*—
MacFaden, Donald R., 263,029, Cl. D11-79.000.
Strombecker Corporation: *See*—
Rasmussen, Kurt S., 263,062, Cl. D21-61.000.
Styman, Alan F.; and Hickman, Ronald P., to Tekron Licensing B.V. Seat. 263,007, 2-16-82, Cl. D6-26.000.
Suzuki, Akira, to Takagi, Kazusuke, a part interest. Electric lamp. 263,084, 2-16-82, Cl. D26-111.000.
Swayze, Clark E.: *See*—
Schoeneck, Robert L.; Smith, William C.; Hoyle, Wallis I.; Swayze, Clark E.; Carder, Terry L.; and Theriault, Albert N., 263,025, Cl. D9-404.000.
Takagi, Kazusuke: *See*—
Suzuki, Akira, 263,084, Cl. D26-111.000.
TDK Electronics Co., Ltd.: *See*—
Yoshizawa, Keiichi, 263,060, Cl. D20-27.000.
Tekron Licensing B.V.: *See*—
Styman, Alan F.; and Hickman, Ronald P., 263,007, Cl. D6-26.000.
Theriault, Albert N.: *See*—
Schoeneck, Robert L.; Smith, William C.; Hoyle, Wallis I.; Swayze, Clark E.; Carder, Terry L.; and Theriault, Albert N., 263,025, Cl. D9-404.000.
Thomson, Arthur E.: *See*—
Hanaford, Donald E., 263,012, Cl. D6-194.000.
Trussler, Peter D. H., to Northern Telecom Limited. Telephone base. 263,047, 2-16-82, Cl. D14-60.000.
Ueda, Yoshiaki, to Matsushita Electric Industrial Co., Ltd. Vacuum cleaner nozzle. 263,052, 2-16-82, Cl. D32-33.000.
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Janke, Heinrich; and Uellenberg, Hans-Kurt, 263,057, Cl. D16-131.000.
Uyeda, Tim M.: *See*—
Chow, Ho; and Uyeda, Tim M., 263,069, Cl. D23-38.000.
Waterman S.A.: *See*—
Carre, Alain, 263,031, Cl. D10-39.000.
Yeldell, Nokomis: *See*—
Reaves, Ransom; and Yeldell, Nokomis. 263,089, Cl. D99-34.000.
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Lautz, Louis R., 4,824, Cl. 34.000.
Dilworth, William L., to J & L Plants Inc. Yellow kalanchoe plant. 4,825, 2-16-82, Cl. 68.000.
J & L Plants Inc.: *See*—
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CLASSIFICATION OF PATENTS

ISSUED FEBRUARY 16, 1982

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

85 4,315,334
424 4,315,335

CLASS 3

13 4,315,336
4,315,337

CLASS 4

236 4,315,338

CLASS 7

138 4,315,339

CLASS 10

10 R 4,315,340

CLASS 12

10.5 4,315,341

CLASS 15

121 4,315,342
339 4,315,343
345 4,315,344

CLASS 16

267 4,315,345

CLASS 19

65 CR 4,315,346
145.7 4,315,347

CLASS 23

230 R 4,315,754
232 E 4,315,753

CLASS 24

20 CW 4,315,348
33 C 4,315,349
68 R 4,315,350
198 4,315,351
241 SP 4,315,352

CLASS 27

2 4,315,353
27 4,315,354

CLASS 28

251 4,315,355

CLASS 29

6.1 4,315,356
23.5 4,315,357
25.42 4,315,358
149.5 A 4,315,359
159.03 4,315,360
432.1 4,315,361
433 4,315,362
596 4,315,363
623.1 4,315,364
739 4,315,365
854 4,315,366
866 4,315,367

CLASS 30

124 4,315,368
257 4,315,369
386 4,315,370

CLASS 33

1 M 4,315,371
148 F 4,315,372
174 TD 4,315,373

CLASS 36

126 4,315,374

CLASS 37

118 R 4,315,375

CLASS 40

124.4 4,315,376

CLASS 42

42 R 4,315,377
50 4,315,378
71 P 4,315,379

CLASS 44

51 4,315,755
59 4,315,756

CLASS 47

58 4,315,380
59 4,315,381
66 4,315,382

CLASS 48

71 4,315,757
197 R 4,315,758

CLASS 51

118 4,315,383
267 4,315,384

CLASS 52

80 4,315,385
93 4,315,386
156 4,315,387
173 R 4,315,388
185 4,315,389
288 4,315,390
293 4,315,391
309.1 4,315,392
710 4,315,393

CLASS 53

553 4,315,394

CLASS 55

18 4,315,759
46 4,315,760

CLASS 56

10.1 4,315,395
320.1 4,315,396

CLASS 57

58.49 4,315,397
58.95 4,315,398
302 4,315,399

CLASS 60

39.02 4,315,400
261 4,315,401
641.3 4,315,402
643 4,315,403
690 4,315,404
752 4,315,405
754 4,315,406

CLASS 62

53 4,315,407
55 4,315,408
63 4,315,409
66 4,315,410
112 4,315,411
179 4,315,412
180 4,315,413
231 4,315,414
263 4,315,415
438 4,315,416
514 R 4,315,417

CLASS 64

28 R 4,315,418

CLASS 66

87 4,315,419

CLASS 70

379 R 4,315,420

CLASS 71

21 4,315,761
27 4,315,762
29 4,315,763
76 4,315,764
87 4,315,765
88 4,315,766
91 4,315,767
98 4,315,768
111 4,315,769

CLASS 72

42 4,315,421
388 4,315,422
466 4,315,423
479 4,315,424
481 4,315,425

CLASS 73

9 4,315,426
52 4,315,427
61 R 4,315,428
84 4,315,429
190 CV 4,315,430
203 4,315,431
431 4,315,432
517 B 4,315,434
517 R 4,315,433
628 4,315,435
861.54 4,315,436

CLASS 74

89.22 4,315,437
352 4,315,438
661 4,315,439
665 G 4,315,440
665 M 4,315,441
687 4,315,442
695 4,315,443

CLASS 75

0.5 BC 4,315,770
41 4,315,771
52 4,315,772
58 4,315,773
74 4,315,774
76 4,315,775
208 R 4,315,776
232 4,315,777

CLASS 76

101 R 4,315,444

CLASS 81

5.1 R 4,315,445
57.38 4,315,446
421 4,315,447

CLASS 83

167 4,315,448
319 4,315,449
862 4,315,450

CLASS 84

1.03 4,315,451
1.26 4,315,452
422 R 4,315,453

CLASS 92

170 4,315,454

CLASS 98

32 4,315,455
36 4,315,456
40 C 4,315,457
115 VM 4,315,458

CLASS 100

39 4,315,459

CLASS 101

93.09 4,315,460
115 4,315,461

CLASS 102

204 4,315,462
303 4,315,463

CLASS 104

10 4,315,464

CLASS 105

4 R 4,315,465

CLASS 106

19 4,315,778
35 4,315,779

CLASS 108

147 4,315,466
157 4,315,467

CLASS 110

101 CF 4,315,468
245 4,315,469

CLASS 112

121.15 4,315,470
153 4,315,471
158 E 4,315,472
217.1 4,315,473
242 4,315,474

CLASS 114

61 4,315,475
151 4,315,476

CLASS 118

64 4,315,477
262 4,315,478
726 4,315,479

CLASS 119

14.49 4,315,480
21 4,315,481
29 4,315,482
51.11 4,315,483
53 4,315,484

CLASS 122

406 R 4,315,485
510 4,315,486

CLASS 123

146.5 A 4,315,487
213 4,315,488
4,315,489
275 4,315,490
478 4,315,491
571 4,315,492
617 4,315,493

CLASS 125

35 4,315,494

CLASS 126

194 4,315,495
415 4,315,496
416 4,315,497
422 4,315,498
4,315,499
425 4,315,500
449 4,315,501

CLASS 128

1 C 4,315,502
1.5 4,315,503
149 4,315,504
200.26 4,315,505
276 4,315,506
287 4,315,507
289 4,315,508
303 R 4,315,509
303.1 4,315,510
305 4,315,511
344 4,315,512
348 4,315,513
653 4,315,514

CLASS 131

60 Re.30,865
303 4,315,515

CLASS 132

37 R Re.30,866
89 4,315,517
90 4,315,516

CLASS 134

7 4,315,780

CLASS 136

244 4,316,049
253 4,316,048

CLASS 137

3 4,315,518
56 4,315,519
82 4,315,520
85 4,315,521
355.17 4,315,522
486 4,315,523
514.3 4,315,524
625.4 4,315,525
630.14 4,315,526

CLASS 138

30 4,315,527
106 4,315,528

CLASS 139

1 C 4,315,529
76 4,315,530

CLASS 141

98 4,315,531
183 4,315,532
387 4,315,533

CLASS 144

194 4,315,534

CLASS 148

1.5 4,315,781
4,315,782
12 C 4,315,783

CLASS 149

2 4,315,784
4,315,787
19.8 4,315,785
22 4,315,786

CLASS 150

11 4,315,535

CLASS 152

330 R 4,315,536

CLASS 156

85 4,315,788
181 4,315,789
230 4,315,790
304.2 4,315,791
306.6 4,315,792
443 4,315,793
504 4,315,794
542 4,315,795
614 4,315,796
654 4,315,797

CLASS 162

161 4,315,798
353 4,315,799

CLASS 164

27 4,315,537
488 4,315,538

CLASS 165

1 4,315,539
67 4,315,540
94 4,315,541

CLASS 166

117.7 4,315,542
202 4,315,543
214 4,315,544
274 4,315,545

CLASS 171

65 4,315,546

CLASS 172

1 4,315,547
430 4,315,548
657 4,315,549

CLASS 173

28 4,315,550
128 4,315,551
159 4,315,552

CLASS 174

7 4,316,050
11 R 4,316,051
14 R 4,316,052
84 S 4,316,053
140 S 4,316,054

CLASS 175

207 4,315,553

CLASS 177

256 4,315,554

CLASS 178

22.06 4,316,055
23 R 4,316,056
63 E 4,316,057

CLASS 179

1 CN 4,316,059
1 D 4,316,060
1 GQ 4,316,058
15.55 T 4,316,061
111 R 4,316,062

CLASS 180

140 4,315,555
255 4,315,556

CLASS 181

168 4,315,557
227 4,315,558
265 4,315,559
275 4,315,560

CLASS 184

106 4,315,561

CLASS 185

37 4,315,562

CLASS 188

73.1 4,315,563

CLASS 192

53 F 4,315,564
113 B 4,315,565

CLASS 193

37 4,315,566

CLASS 194

101 4,315,567

CLASS 196

14.52 4,315,801

CLASS 198

690 4,315,568

CLASS 200

16 C 4,316,063
17 R 4,316,064
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291 4,316,067
670 4,316,066

CLASS 202

158 4,315,802
4,315,803
263 4,315,804

CLASS 204

98 4,315,805
129.4 4,315,806
159.18 4,315,807
169 4,315,808
224 R 4,315,809
257 4,315,810
279 4,315,811
299 R 4,315,812

CLASS 206

45.31 4,315,569
221 4,315,570
312 4,315,571

CLASS 208

33 4,315,813
111 4,315,814
321 4,315,815

CLASS 209

223 A 4,315,816
315 4,315,817

CLASS 210

242.3 4,315,818
321.3 4,315,819
408 4,315,820
605 4,315,821
4,315,823
769 4,315,824
794 4,315,822

CLASS 211

45 4,315,572

CLASS 215

12 R 4,315,573

CLASS 219

10.55 B 4,316,068
10.55 E 4,316,070
10.55 F 4,316,069
69 R 4,316,071
86.24 4,316,072
121 L 4,316,074
121 LL 4,316,073
124.22 4,316,075
124.34 4,316,076
370 4,316,077
386 4,316,078
413 4,316,079
505 4,316,080

CLASS 220

72 4,315,574
89 A 4,315,575
282 4,315,576
323 4,315,577
366 4,315,578
371 4,315,579

CLASS 221

185 4,315,580

CLASS 222

83 4,315,581
148 4,315,582

CLASS 224

41 4,315,583

CLASS 225

2 4,315,584

CLASS 226

74 4,315,585
141 4,315,586

CLASS 227

67 4,315,587
81 4,315,588
155 4,315,589

CLASS 228

37 4,315,590
188 4,315,591

CLASS 229

38 4,315,592

CLASS 233

21 4,315,593

CLASS 235

92 DN 4,316,081
146 4,316,082
449 4,316,083

CLASS 236

46 R 4,315,595
94 4,315,596

CLASS 237

2 B 4,315,597
70 4,315,598

CLASS 239

10 4,315,599
74 4,315,600
142 4,315,601
163 4,315,602
533.3 4,315,603

CLASS 241

82.5 4,315,604
192 4,315,605

CLASS 242

7.19 4,315,606
36 4,315,607
68 4,315,608

CLASS 244

3.14 4,315,609
3.16 4,315,610

CLASS 248

340 4,315,611
406 4,315,613
479 4,315,614
489 4,315,615
538 4,315,612

CLASS 250

203 R 4,316,084
204 4,316,085
262 4,316,086
307 4,316,087
338 4,316,088
385 4,316,089
423 R 4,316,090
445 T 4,316,091
483 4,316,092
492.1 4,316,093
504 R 4,316,094

CLASS 251

210 4,315,616

CLASS 252

41 4,315,825
46.4 4,315,826
62.51 4,315,827
153 4,315,828
182 4,315,830
182.1 4,315,829
301.4 R 4,315,832
314 4,315,833
373 4,315,834
429 B 4,315,835
4,315,836
430 4,315,837
448 4,315,838
4,315,839
628 4,315,831

CLASS 254

371 4,315,617

CLASS 260

18 TN 4,315,840
23.7 M 4,315,841
28.5 B 4,315,842
29.6 PT 4,315,843
42.16 4,315,844
42.28 4,315,845
45.7 PH 4,315,847
45.75 B 4,315,849
45.75 S 4,315,850
45.8 NT 4,315,848
112 B 4,315,851
112 R 4,315,852
112.5 R 4,315,853
145 A 4,315,854
155 4,315,855
192 4,315,856
207.1 4,315,857
239.1 4,315,858
243.3 4,315,859
245.7 4,315,860
340.9 R 4,315,861
345.2 4,315,862
346.74 4,315,863
346.75 4,315,864
373 4,315,865
397.3 4,315,866
429.9 4,315,846
439 R 4,315,867
465 D 4,315,868
465.2 4,315,869
947 4,315,870

CLASS 261

65 4,315,871
113 4,315,872
158 4,315,873

CLASS 264

5 4,315,874
23 4,315,875
40.1 4,315,876
45.9 4,315,877
107 4,315,878
117 4,315,879
119 4,315,880
171 4,315,881
4,315,882
174 4,315,883
255 4,315,884
297 4,315,885
318 4,315,886
328.16 4,315,887
503 4,315,888

CLASS 266

69 4,315,618
89 4,315,619
193 4,315,620

CLASS 271

296 4,315,621
311 4,315,622

CLASS 272

74 4,315,623

CLASS 273

32 A 4,315,624
129 L 4,315,625
186 C 4,315,626
249 4,315,627
296 4,315,628
425 4,315,629

CLASS 277

207 A 4,315,630

CLASS 280

6 H 4,315,631
40 4,315,632
79.3 4,315,633
154.5 R 4,315,634
642 Re.30,867
655 4,315,635
703 4,315,636
801 4,315,637
803 4,315,638
4,315,639
808 4,315,640
822 4,315,641

CLASS 281

33 4,315,642

CLASS 282

27.5 4,315,643

CLASS 285

179 4,315,644

CLASS 289

18.1 4,315,645

CLASS 290

38 R 4,316,095
44 4,316,096

CLASS 292

68 4,315,646
143 4,315,647
150 4,315,648
201 4,315,649

CLASS 294

19 R 4,315,650
83 R 4,315,651
86 R 4,315,652

CLASS 296

63 4,315,653

CLASS 297

118 4,315,655
188 4,315,654

CLASS 299

1 4,315,656
2 4,315,657
43 4,315,658

CLASS 303

116 4,315,659

CLASS 307

66 4,316,097
119 4,316,098
221 D 4,316,100
296 R 4,316,102
304 4,316,103
308 4,316,104
362 4,316,105
481 4,316,106
492 4,316,107
521 4,316,108
578 4,316,101

CLASS 308

9 4,315,660

CLASS 310

114 4,316,109
154 4,316,099
155 4,316,110
218 4,316,111
258 4,316,112
262 4,316,113
270 4,316,114
327 4,316,115

CLASS 312

330 R 4,315,661

CLASS 313

344 4,316,116
422 4,316,117
4,316,118

CLASS 315

8 4,316,119
58 4,316,120
62 4,316,121
74 4,316,122
169.4 4,316,123
205 4,316,124
241 R 4,316,125
375 4,316,126
408 4,316,127
411 4,316,128

CLASS 318

313 4,316,129
551 4,316,130
612 4,316,131
723 4,316,132

CLASS 320

48 4,316,133

CLASS 322

99 4,316,134

CLASS 323

265 4,316,135
282 4,316,136
364 4,316,137
4,316,138

CLASS 324

52 4,316,139
71 SN 4,316,140
96 4,316,141
127 4,316,142
161 4,316,143
174 4,316,144
208 4,316,145
209 4,316,146
300 4,316,147

CLASS 328

55 4,316,148

CLASS 330

268 4,316,149

CLASS 331

1 A 4,316,150
4,316,151
4,316,152
3 4,316,153
4 4,316,154
18 4,316,155
111 4,316,158

CLASS 333

104 4,316,159
120 4,316,160
141 4,316,161
201 4,316,162

CLASS 335

37 4,316,163
202 4,316,164
4,316,165
213 4,316,166
229 4,316,167

CLASS 336

70 4,316,169

CLASS 337

257 4,316,170
359 4,316,168

CLASS 338

21 4,316,171
280 4,316,172

CLASS 339

97 C 4,315,662
97 P 4,315,663
176 M 4,315,664

CLASS 340

32 4,316,173
52 R 4,316,174
57 4,316,175
58 4,316,176
146.2 4,316,177
347 DA 4,316,178
538 4,316,179
562 4,316,180
571 4,316,181
606 4,316,182
621 4,316,183
628 4,316,184
636 4,316,185
648 4,316,186
664 4,316,187
675 Re.30,868
693 4,315,594
735 4,316,188
870.34 4,316,189

CLASS 343

6.5 R 4,316,190
16 R 4,316,191
100 SA 4,316,192
112 D 4,316,193
700 MS 4,316,194
758 4,316,195

CLASS 346

1.1 4,316,196
140 R 4,316,197
150 4,316,198
160 4,316,199

CLASS 350

3.61 4,315,665
96.15 4,315,666
96.34 4,315,667
343 4,315,668
426 4,315,669
429 4,315,670
451 4,315,671

CLASS 351

13 4,315,672
169 4,315,673

CLASS 354

25 4,315,674
26 4,315,675
27 4,315,676
49 4,315,677
51 4,315,678
128 4,315,679
195 4,315,680
197 4,315,681

CLASS 355

3 FU 4,315,682
8 4,315,683
14 R 4,315,684
4,315,685
38 4,315,686
75 4,315,687

CLASS 356

73 4,315,688
141 4,315,689
152 4,315,690
331 4,315,691
350 4,315,693
399 4,315,692

CLASS 357

5 4,316,200
15 4,316,201
4,316,202
23 4,316,203
30 4,316,204
4,316,205
4,316,206
41 4,316,207
55 4,316,208
67 4,316,209

CLASS 358

4 4,316,210
10 4,316,211
4,316,212
11 4,316,213
21 R 4,316,214
37 4,316,215
67 4,316,216
86 4,316,217
125 4,316,218
150 4,316,219
196 4,316,220
213 4,316,221
261 4,316,222

CLASS 360

39 4,316,223
72.2 4,316,224
107 4,316,225
109 4,316,226
121 4,316,227
127 4,316,228

CLASS 361

42 4,316,229
114 4,316,230
212 4,316,231
232 4,316,232
233 4,316,233
342 4,316,234
408 4,316,235
429 4,316,236

CLASS 362

33 4,316,237
147 4,316,238
155 4,316,239
267 4,316,240
268 4,316,241

CLASS 363

21 4,316,242
132 4,316,243

CLASS 364

200 4,316,244
4,316,245
4,316,246
4,316,247
4,316,248
417 4,316,249
422 4,316,250
424 4,316,251
428 4,316,252
432 4,316,253
481 4,316,254
501 4,316,255
505 4,316,256
527 4,316,257
602 4,316,258
718 4,316,259
900 4,316,260
4,316,261
4,316,262

CLASS 365

12 4,316,263
190 4,316,264
203 4,316,265

CLASS 367

21 4,316,266
68 4,316,267
4,316,268
90 4,316,269
98 4,316,270
140 4,316,271

CLASS 368

21 4,316,272
47 4,316,273
66 4,316,274
4,316,275
70 4,316,276
76 4,316,277

CLASS 369

100 4,316,278
109 4,316,279
250 4,316,280
291 4,316,281

CLASS 370

70 4,316,282
94 4,316,283
105 4,316,284
4,316,285

CLASS 372

50 4,316,156
59 4,316,157

CLASS 376

246 4,315,800

CLASS 400

144.2 4,315,694

CLASS 401

99 4,315,695

CLASS 402

70 4,315,696
79 4,315,697

CLASS 403

59 4,315,698
361 4,315,699

CLASS 404

111 4,315,700

CLASS 405

150 4,315,701
170 4,315,702
264 4,315,703

CLASS 406

12 4,315,704
73 4,315,705

CLASS 407

101 4,315,706

CLASS 410

47 4,315,707

CLASS 411

65 4,315,708

CLASS 414

22 4,315,709
47 4,315,710
97 4,315,711
149 4,315,712

CLASS 415

2 R 4,315,713
207 4,315,714
4,315,715

CLASS 417

27 4,315,716
69 4,315,717
477 4,315,718

CLASS 418

15 4,315,719

CLASS 422

7 4,315,889
58 4,315,890
64 4,315,891
101 4,315,892
109 4,315,893
151 4,315,894
171 4,315,895

CLASS 423

54 4,315,896
274 4,315,897
315 4,315,898
321 R 4,315,899
359 4,315,900
455 4,315,901
456 4,315,902
573 R 4,315,903
574 R 4,315,904
592 4,315,905

CLASS 424

1 4,315,906
4,315,907
4,315,908
35 4,315,909
47 4,315,910
48 4,315,911
70 4,315,912
88 4,315,913
89 4,315,914
143 4,315,915
145 4,315,916
155 4,315,917
177 4,315,918
4,315,919
180 4,315,920
4,315,921
181 4,315,922
183 4,315,923
233 4,315,924
239 4,315,925
244 4,315,926
245 4,315,927
248.5 4,315,928

CLASSIFICATION OF PATENTS

248.54	4,315,929
249	4,315,930
251	4,315,931
	4,315,932
	4,315,933
256	4,315,934
258	4,315,935
260	4,315,936
261	4,315,937
267	4,315,938
	4,315,939
	4,315,940
269	4,315,941
295	4,315,942
304	4,315,943
319	4,315,944
CLASS 425	
8	4,315,720
81.1	4,315,721
83.1	4,315,722
110	4,315,723
130	4,315,724
174.4	4,315,725
560	4,315,726
563	4,315,727
589	4,315,728
CLASS 426	
3	4,315,945
46	4,315,946
250	4,315,947
266	4,315,948
334	4,315,949
509	4,315,950
536	4,315,951
	4,315,952
538	4,315,953
583	4,315,954
585	4,315,955
CLASS 427	
52	4,315,956
155	4,315,957
214	4,315,958
	4,315,959
248.1	4,315,960
385.5	4,315,961
CLASS 428	
12	4,315,962
35	4,315,963
182	4,315,964
198	4,315,965
260	4,315,966
285	4,315,967
367	4,315,968
395	4,315,969
412	4,315,970
419	4,315,971
542	4,315,972
CLASS 429	
111	4,315,973
181	4,315,974
191	4,315,975
194	4,315,976
233	4,315,977
CLASS 430	
4	4,315,978
6	4,315,979
58	4,315,980
59	4,315,981
	4,315,982
70	4,315,983
296	4,315,984
314	4,315,985
411	4,315,986
CLASS 431	
75	4,315,729
76	4,315,730
254	4,315,731
344	4,315,732
362	4,315,733
CLASS 432	
14	4,315,734
25	4,315,735
59	4,315,736
241	4,315,737
258	4,315,738
CLASS 433	
21	4,315,739
63	4,315,740
82	4,315,741
86	4,315,742
90	4,315,743
126	4,315,744
141	4,315,745
CLASS 434	
2	4,315,746
150	4,315,747
159	4,315,748
CLASS 435	
162	4,315,987
221	4,315,988
253	4,315,989
291	4,315,990
CLASS 440	
42	4,315,749
CLASS 474	
153	4,315,750
154	4,315,751
CLASS 493	
171	4,315,752
CLASS 501	
26	4,315,991
101	4,315,992
CLASS 518	
700	4,315,993
701	4,315,994
CLASS 521	
33	4,315,995
54	4,315,996
CLASS 525	
94	4,315,997
332	4,315,998
CLASS 526	
114	4,315,999
301	4,316,000
CLASS 528	
14	4,316,001
107	4,316,002
111	4,316,003
126	4,316,004
256	4,316,005
398	4,316,006
405	4,316,007
687	4,316,008
502	4,316,009
CLASS 536	
9	4,316,010
17 A	4,316,011
114	4,316,012
CLASS 542	
445	4,316,013
CLASS 544	
7	4,316,014
	4,316,015
16	4,316,016
27	4,316,018
28	4,316,019
026	4,316,017
105	4,316,020
139	4,316,021
184	4,316,022
300	4,316,023
359	4,316,024
364	4,316,025
CLASS 546	
5	4,316,026
15	4,316,027
51	4,316,028
	4,316,029
138	4,316,030
175	4,316,031
CLASS 548	
109	4,316,032
110	4,316,033
124	4,316,034
131	4,316,035
153	4,316,036
253	4,316,037
352	4,316,038
362	4,316,039
377	4,316,040
CLASS 556	
420	4,316,041
CLASS 560	
27	4,316,042
53	4,316,043
105	4,316,044
130	4,316,045
	4,316,046
206	4,316,047

CLASSIFICATION OF DESIGNS

D2—	36	263,005
	190	263,006
D6—	26	263,007
	73	263,008
	97	263,009
	191	263,010
	193	263,011
	194	263,012
	250	263,013
D7—	75	263,014
	76	263,015
D8—	30	263,018
	70	263,019
	99	263,020
	373	263,021
	402	263,022
D9—	347	263,023
	351	263,024
	404	263,025
		263,026
D10—	24	263,030
	39	263,031
	46.1	263,061
	57	263,027
	70	263,032
	78	263,033
D11—	2	263,028
	79	263,029
	87	263,034
D12—	8	263,035
	105	263,037
	110	263,038
	115	263,039
	148	263,041
	181	263,040
D13—	23	263,042
D14—	3	263,044
	36	263,043
	53	263,045
		263,046
	60	263,047
	63	263,048
		263,049
D15—	7	263,050
	24	263,051
	98	263,053
	144	263,054
	150	263,055
D16—	5	263,056
	117	263,058
	131	263,057
D19—	69	263,059
D20—	27	263,060
D21—	61	263,062
	102	263,063
		263,064
		263,065
	237	263,066
D22—	14	263,067
	19	263,068
D23—	38	263,069
	95	263,070
	163	263,071
		263,072
D24—	10	263,073
	17	263,074
	23	263,075
	29	263,076
	33	263,079
	36	263,077
	52	263,078
D25—	22	263,080
	25	263,081
	92	263,082
D26—	11	263,083
	111	263,084
D28—	35	263,085
D29—	6	263,086
		263,087
D32—	33	263,052
D34—	1	263,016
	11	263,017
	31	263,036
D99—	5	263,088
	34	263,089

CLASSIFICATION OF PLANTS

P.—		4,824		68	4,825						

GEOGRAPHICAL INDEX

OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 : 4,315,693	4,315,886	4,315,628	4,316,257	4,316,080	4,316,096
04 : 4,315,858	4,315,903	4,315,661	18 : 4,315,387	4,316,083	4,316,147
4,315,948	4,315,905	4,315,697	4,315,525	4,316,107	4,316,148
4,316,082	4,315,919	4,315,717	4,315,599	4,316,115	4,316,256
4,316,160	4,315,928	4,315,746	4,315,613	4,316,140	28 : 4,315,338
05 : 4,315,762	4,316,035	4,315,810	4,315,803	4,316,241	4,315,475
06 : 4,315,334	4,316,062	4,315,811	4,315,990	4,316,244	4,315,623
4,315,350	4,316,066	4,315,890	4,316,021	4,316,246	4,315,862
4,315,372	4,316,102	4,316,108	4,316,143	4,316,248	29 : 4,315,465
4,315,377	4,316,139	4,316,218	4,316,210	26 : 4,315,342	4,315,700
4,315,379	4,316,156	4,316,231	4,316,213	4,315,362	4,315,739
4,315,381	4,316,159	13 : 4,315,424	4,316,214	4,315,413	4,315,892
4,315,390	4,316,196	4,315,481	4,316,220	4,315,414	4,316,007
4,315,408	4,316,206	4,315,580	4,316,243	4,315,449	31 : 4,315,950
4,315,435	4,316,227	4,315,592	4,316,281	4,315,461	32 : 4,315,565
4,315,462	4,316,254	16 : 4,315,353	20 : 4,315,448	4,315,466	34 : 4,315,358
4,315,477	4,316,264	17 : 4,315,340	4,315,632	4,315,483	4,315,368
4,315,479	4,316,267	4,315,354	21 : 4,315,344	4,315,513	4,315,369
4,315,490	4,316,268	4,315,363	4,315,515	4,315,550	4,315,400
4,315,499	4,316,278	4,315,367	4,315,578	4,315,614	4,315,422
4,315,505	08 : 4,315,423	4,315,382	4,315,925	4,315,637	4,315,446
4,315,511	4,315,583	4,315,383	4,316,069	4,315,639	4,315,458
4,315,512	4,315,630	4,315,404	22 : 4,315,535	4,315,645	4,315,503
4,315,516	4,315,657	4,315,442	4,315,775	4,315,655	4,315,510
4,315,517	4,315,682	4,315,450	4,315,888	4,315,706	4,315,576
4,315,523	4,315,828	4,315,452	4,315,906	4,315,727	4,315,582
4,315,539	4,316,152	4,315,504	24 : 4,315,378	4,315,847	4,315,595
4,315,542	4,316,198	4,315,509	4,315,412	4,315,876	4,315,598
4,315,545	4,316,271	4,315,521	4,315,433	4,315,930	4,315,662
4,315,554	09 : Re.30,866	4,315,522	4,315,671	4,315,933	4,315,782
4,315,561	4,315,391	4,315,568	4,315,747	4,315,947	4,315,802
4,315,596	4,315,436	4,315,642	4,315,942	4,315,969	4,315,814
4,315,601	4,315,438	4,315,646	4,316,161	4,315,970	4,315,824
4,315,609	4,315,482	4,315,656	4,316,192	4,316,006	4,315,852
4,315,610	4,315,570	4,315,699	4,316,249	4,316,084	4,315,860
4,315,627	4,315,585	4,315,718	25 : 4,315,444	4,316,132	4,315,885
4,315,641	4,315,683	4,315,731	4,315,478	4,316,144	4,315,893
4,315,647	4,315,714	4,315,744	4,315,501	4,316,145	4,315,896
4,315,651	4,315,779	4,315,758	4,315,586	4,316,155	4,315,898
4,315,653	4,315,780	4,315,801	4,315,666	4,316,174	4,315,910
4,315,665	4,315,799	4,315,929	4,315,675	4,316,176	4,315,911
4,315,680	4,316,010	4,315,946	4,315,676	4,316,191	4,315,913
4,315,705	4,316,038	4,316,079	4,315,677	4,316,239	4,315,926
4,315,711	4,316,129	4,316,091	4,315,681	27 : 4,315,373	4,315,935
4,315,732	10 : 4,315,767	4,316,134	4,315,696	4,315,546	4,315,945
4,315,749	4,315,856	4,316,151	4,315,733	4,315,608	4,315,951
4,315,751	11 : 4,316,273	4,316,170	4,315,795	4,315,633	4,315,952
4,315,752	12 : 4,315,364	4,316,180	4,315,798	4,315,652	4,315,953
4,315,765	4,315,401	4,316,184	4,315,806	4,315,703	4,315,958
4,315,781	4,315,434	4,316,229	4,315,877	4,315,878	4,315,965
4,315,786	4,315,468	4,316,233	4,315,968	4,315,955	4,316,049
4,315,827	4,315,625	4,316,235	4,316,060	4,315,974	4,316,058
4,315,832	4,315,626	4,316,238	4,316,078	4,316,000	4,316,061

4,316,073
4,316,097
4,316,117
4,316,118
4,316,126
4,316,154
4,316,177
4,316,194
4,316,197
4,316,211
4,316,212
4,316,219
4,316,240
4,316,276
4,316,279
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4,316,284
4,316,285
35 : 4,315,809
36 : 4,315,336
4,315,343
4,315,359
4,315,426
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4,315,457
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4,315,753
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4,316,041
4,316,045
4,316,046
4,316,048
4,316,055
4,316,074
4,316,093
4,316,123
4,316,181
4,316,185
4,316,195
4,316,200
4,316,209
4,316,217
4,316,221
4,316,242
4,316,259
37 : 4,315,587
4,315,819
4,315,932
38 : 4,315,927
39 : 4,315,484
4,315,502
4,315,534
4,315,537

4,315,538
4,315,573
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4,316,116
4,316,120
4,316,121
4,316,186
4,316,188
40 : 4,315,402
4,315,415
4,315,455
4,315,543
4,315,553
4,315,559
4,315,611
4,315,815
4,315,894
4,315,901
4,315,902
4,315,995
4,316,095
4,316,099
4,316,109

41 : 4,315,375
4,315,445
4,315,500
4,315,629
4,316,150
42 : 4,315,355
4,315,365
4,315,374
4,315,395
4,315,421
4,315,427
4,315,430
4,315,447
4,315,588
4,315,605
4,315,663
4,315,664
4,315,709
4,315,742
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4,315,785
4,315,789
4,315,812
4,315,820
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4,315,936
4,315,956
4,316,037
4,316,043
4,316,053
4,316,067
4,316,072
4,316,103

4,316,110
4,316,119
4,316,133
4,316,166
4,316,189
4,316,199
4,316,263
44 : 4,316,077
45 : 4,315,624
46 : 4,315,917
47 : 4,315,495
4,315,916
48 : 4,315,335
4,315,339
4,315,361
4,315,376
4,315,577
4,315,602
4,315,606
4,315,616
4,315,694
4,315,704
4,315,763
4,315,793
4,315,797
4,315,805
4,315,823
4,315,844
4,315,873
4,315,993
4,315,994
4,316,003
4,316,008
4,316,086
4,316,106
4,316,187
49 : 4,315,480

51 : Re.30,865
4,315,420
4,315,431
4,315,518
4,315,830
4,315,920
4,316,201
53 : 4,315,393
4,315,487
4,315,492
4,315,552
4,315,555
4,315,579
4,315,612
4,315,621
4,316,193
4,316,252
54 : 4,315,889
55 : Re.30,867
4,315,347
4,315,432
4,315,459
4,315,464
4,315,506
4,315,507
4,315,508
4,315,520
4,315,569
4,315,572
4,315,721
4,315,822
4,316,076
4,316,172
4,316,179
4,316,230
56 : 4,315,833

DESIGN PATENTS

04 : 263,009
263,012
263,015
263,080
06 : 263,011
263,027
263,037
263,039
263,040
263,053
263,061

263,066
263,067
263,075
263,076
263,078
08 : 263,024
263,079
09 : 263,058
12 : 263,030
263,043

13 : 263,081
263,087
15 : 263,013
17 : 263,045
263,049
263,051
263,062
18 : 263,022
25 : 263,029
27 : 263,021

263,088
31 : 263,020
33 : 263,042
34 : 263,028
263,046
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263,069
263,074
36 : 263,006
263,018

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263,083
37 : 263,010
263,017
263,032
39 : 263,026
263,086
40 : 263,055

41 : 263,070
42 : 263,033
44 : 263,059
47 : 263,014
263,089
51 : 263,077
53 : 263,016
55 : 263,025
263,035
263,085

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